No advertising

No 43 — August-October, 1984 — $2.50*

EARTH GARDEN

Earth domes and vaults

- *Earth Gardeners* write on mudbrick building, rendering earth walls, pole building, bush stone masonry, chook pens, learning about sheep, farming with wildlife.
- *Peter Pedals' Pelton Wheel,* remote power systems, a bush shower, incinerator hot water, make handy sheetmetal pans, energy access, low voltage wiring.
- *Plus:* Daintree blockade, riding for the disabled, travelling with children, frugality as an ethic, worthy work, Rape of the Solomons, organic matters, herbal poultices, access, lots more!

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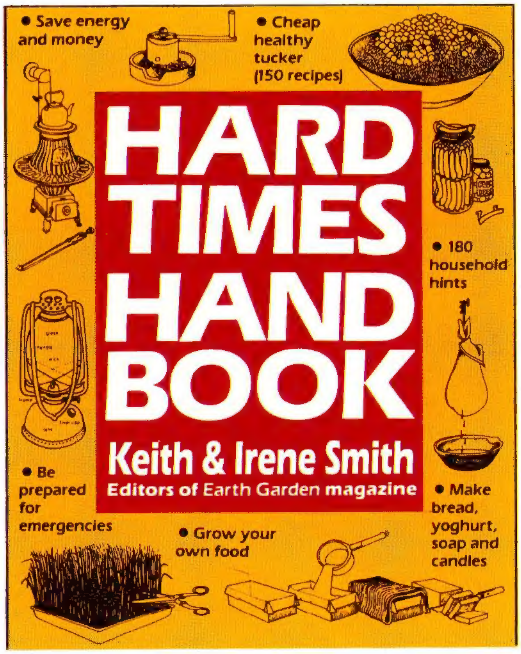
HARD TIMES HANDBOOK

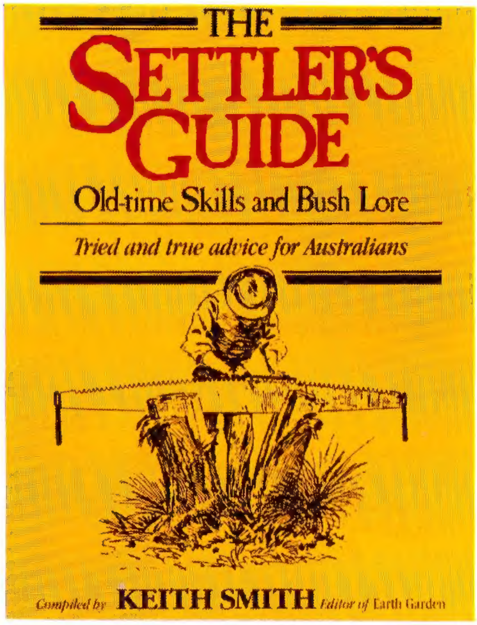
Skills, strategies and short-cuts.
How to survive — and thrive!

Keith & Irene Smith.

Nelson, 1984, paperback, 204 pages, with 70 illustrations by Elaine Norling. Price $7.50 posted.

You don't have to move to the country to take the first steps towards self-reliance. HARD TIMES HANDBOOK outlines a new approach to city living. It tells you how to do more with less, be prepared for blackouts and food shortages, manage your food supply, save energy and make money without a job. Make bread, yoghurt, soft cheese, soap and candles. There are 150 recipes for cheap, healthy tucker and 180 household hints.


• Save energy and money
• Cheap healthy tucker (150 recipes)
HARD TIMES HAND BOOK
Keith & Irene Smith
Editors of Earth Garden magazine
• 180 household hints
• Be prepared for emergencies
• Grow your own food
• Make bread, yoghurt, soap and candles


THE SETTLER'S GUIDE
Old-time Skills and Bush Lore
Tried and true advice for Australians
Compiled by KEITH SMITH Editor of Earth Garden

THE SETTLER'S GUIDE

Old time skills and bush lore.

Compiled by Keith Smith.

Nelson, 1983 (second printing), large format paperback, 176 pages, illustrations and photographs. Price $15.95 posted.

Pioneer a bush block from 'go' to 'whoa' with this selection from *The Agricultural Gazette of NSW,* 1890-1910. It covers clearing, fencing, squaring a gatepost, making whitewash, building a slab hut, a rammed earth house or a windmill, harnessing horses and selecting, sharpening and caring for bush and workshop tools like axes, adzes, planes, mauls, crosscut saws and scythes. Tried and true advice.

Order form page 58.

Earth Garden, started in 1972, is the original Australian journal of self-reliance. It is intended as a friendly forum of practical ideas, shared knowledge, sources and alternatives.
It's about putting a roof over your head, growing your own food, using alternative energy and surviving — and thriving — in the city or the bush and the inner changes which follow when you are in tune with nature.

Earth Garden is published each quarter in mid February, May, August and November. Annual subscription is $10.00

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Illustrations by Elaine Norling.

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We do not accept advertising. That way we are not influenced by any vested interests. Books, places and products recommended are those we think relevant.

Let us lead you up Earth Garden's path to the good life!

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EARTH GARDEN 43

The cover

Front: Top left — Dr Ruth Cilento at work on a mudbrick vault and *(top right)* the domed and vaulted 'pink palace' she built at her Sun Powered Eukey Complex in southern Queensland.
Below: Left — Peter van der Wyk's Dynohub Pelton Wheel.
Right — Builder Colin Clarke lays the foundation stone of his stone home at Fryerstown, Victoria.
Back cover: a giant butterfly — part of the threatened ecology of New Georgia in the Western Solomons.

People & the land

Organic matters — festivals, compost, power, PVR 4
Giant's Creek, NSW: Our life at 'Swallowfields', by Graham Roberts 6
Costerfield, Victoria: No more Mrs Suburbia, by Vicki Simmons 9
Letters: Earth People write in a friendly forum 11, 47
Three farm systems (pens, poles & pits), by David MacMunn .. 12
Southern Tablelands, NSW: Farming with wildlife, by Jacqueline French 41
Herbal poultices, by Ron Haines, plus herb news 50
Land lines: EG subscribers with land to buy, sell or share .. 56, 57
Gossip: News from us, 1985 subscriptions 58

Energy/practical projects

Refining the bush shower, by David MacMunn 14
Incinerator hot water, by Peter van der Wyk 15
Dynohub Pelton Wheel by Peter van der Wyk 16
Remote power systems — by Rodney Jensen 17
Low voltage electric wiring, by Greg Baker 19
Make handy pans, trays and boxes by Peter Squires 20
Energy access: Drum oven, solar kits & fridge 22
The Eukey Complex (it's sun powered!), by Ruth Cilento 32

Earth travel

Two and two halves to anywhere, by Liz Lewis 24
Travels with Melissa 26
Traveller's Rest (the horse truck parks), by Penelope Lea 27
Trees of friendship — our banyans thrive in Chongqing! 28

Building

Building with bush stone, by Graham Roberts 7
Rock building field days, by Ursula Clarke 10
The domes and vaults at the 'pink palace' at Eukey 29
Building the dome, by Ruth Cilento 30
Building notes . . . Earth architecture exhibition in Victoria 33
A guide to rendering earth walls, by Dr Robert Rich 34
But, says Mudsmith Bob, prepare before you coat 37
Review: Appropriate Building Materials, by Roland Stulz 38
A proposed mass mud mixer, by Rob Thompson 39

Livestock

Learning about sheep, by Michael Hollowood 43
Donkeys: The story of Sage & Lilly, by Armin Ptak 45
Horses: Philippa's in the saddle, by Mary Small 48
Riding for the Disabled . . . "Rattletrap Rosie" 49

Access/Food

Access to books by mail, home education, seeds 23
A mixed plate . . . Indian salads . . . recipes . . . hints 51

Ecology

The Daintree blockade, by John Seed 52
Rape of the Solomons, by Andrew Frame 53

Survive & thrive — subscribe for 1985!

ORGANIC MATTERS

The Adelaide Organic Festival and Conference, an event of major interest to organic growers, will be staged by The Soil Association of South Australia from November 1-4, 1984.

The theme is: **Healthy food from healthy soil.**

The event takes in three different activities — a scientific conference with academic and other speakers, farm tours and a two-day organic festival.

Keynote speaker at the **Scientific Conference on Biological Agriculture,** at the Australian Mineral Foundation at Glenside on Thursday, November 1, will be Prof Dr Hardy Vogtmann, first Professor of Alternative Agriculture at Kassel University, West Germany.

Dr Vogtmann will also address the conference on the nutritional value of farm produce grown under contrasting agricultural systems and will talk at the festival on the organic movement around the world and food quality. He was previously engaged in research into animal nutrition and alternative farming in Switzerland and Canada.

Other speakers at the conference include Dr R. D. Hodges of Wye College, London, who is editor of **Biological Agriculture and Horticulture** journal, Prof John V. Lovett, Professor of Agricultural Science at the University of Hobart, Robert A. Crowder of Lincoln College, New Zealand and Dr Sally Smith of the Waite Agricultural Research Institute, who will speak on mycorrhizal fungi and nitrogen fixation. Conference registration fee is $45.00.

On Friday, November 2, there is a choice of three bus tours of farms using organic or biological methods of agriculture and horticulture in the Adelaide Hills area or north of the city. Tours are $18.00 or $16.00.

The Organic Festival will take place at Morialta High School, Rostrevor, over the weekend of November 3 and 4, with stalls, demonstrations and displays of interest to gardeners and farmers. There will be talks in the school's main hall and a series of workshops (20 each day) in classrooms covering subjects such as composting, developing a home garden, broadacre agriculture and trees in farm enterprises.

Festival speakers include Bill Mollison on urban permaculture, Kevin Handreck of CSIRO Division of Soils on the science of compost making and Peter Bennett on nutrition and food production in Aboriginal communities. A pass for the two days of the festival is $5.00.

Information and registration forms may be obtained by writing to The Festival Co-ordinator, Soil Association of SA Inc, GPO Box 2497, Adelaide, SA 5001, or phone (08) 297 2146 after hours. Registrations close September 30, 1984.

- Dr Hardy Vogtmann will be speaking in Perth at the **Agricultural Survival Conference and Festival** on November 10 and 11, 1984. Contact Organic Growers Association of WA, Box 213, Wembley, WA 6014 for further details. "Eat Organic" will be the theme of the Festival.

He will take part also in an **Organic Know How Education Day,** to be held jointly by The Organic Growers' Association of NSW and the Henry Doubleday Research Association at "Sunset Vista", 115 Francis Street, Bringelly (between Camden and Penrith on the outskirts of Sydney) on Sunday, November 18, 1984. There will also be demonstrations and workshops. Enquiries to J. Lubke (047) 74 8146 or Dianne Ayling (02) 603 4184.

OPEN DAY

The Henry Doubleday Research Association of Australia will hold its annual Open Day at Sahara Farm, Kenthurst (Sydney) on Sunday, October 28. Sahara Farm is in Robson Road, Kenthurst, off Colbran Avenue. It starts at 10 am.

The special interest will be stalls, talks and publications dealing with organic growing and farming, with an inspection of Josephine Richardson's big vegetable garden, with lunch, teas and a barbecue as well as Henry's Seed Bank.

PLANT VARIETY RIGHTS

The findings of the Senate Standing Committee on National Resources were tabled in the Senate at Parliament House in Canberra on May 9, 1984. They recommend that legislation covering plant variety rights (PVR) be adopted for all species of plants, except for "field crops".

This **Plant Variety Bill** proposes to allow patents to breeders who develop new plants or discover new or mutated types of plants. If passed, PVR will allow plant breeders to control the use of a variety, to levy and collect royalties and to prosecute infringers.

The way in which small seed companies were swallowed up by multinational oil and chemical groups after this kind of legislation in Britain and the United States was outlined in **Earth Garden 27** in our story **Seeds for all.**

PVR will increase seed prices. Hybrid seeds produced by the big food monopoly groups mean that growers are dependent on the seed company for supply each year. There will be an inevitable decline in the quality and variety of our food plant seeds. Seeds which do not yield a profit would disappear. Breeding will emphasise high yield and responsiveness to chemical and fertilisers and pesticides.

There are many more arguments against this proposed legislation, which threatens the ability of farmers, smallholders and organic gardeners to be self-reliant. You can find out more about this by sending an SAE to the **Free Access to Seeds Committee** of The Food Justice Centre, 366 Smith Street, Collingwood, Victoria, or **The Plant Diversity Committee,** 18 Argyle Street, Sydney, NSW 2000.

Horticulturists especially and everyone who is involved in growing plants should write to their local member of Parliament to protest at the introduction of PVR and support the Democratic Party Senators, who are pledged against it.

EARTHCARE '84 CONFERENCE

October 12-14, 1984 at Pappinbarra Field Studies Centre, 45km north west of Wauchope, NSW. Pre-registration $25.00 per person, gate $30.00. Open day Sunday, October 14 only, $5.00. Children under 16 free (with proof). Only 500 tickets available. No pets.

This conference, sponsored by Mid North Coast Permaculture Consultancy, will be a gathering of permaculture people on the theme of earth care.

Topics covered will include alternative economics, permaculture village development, reafforestation, fire, urban permaculture, house and garden design (David Holmgren), geese for weed control, arid lands, tropical and sub-tropical permaculture, networks, bamboo and a report on New Alchemy Institute (USA).

Accommodation is camping. The conference will be preceded by the **First International Permaculture Consultants' Conference,** October 8-10.

Further information from Earthcare '84 Conference, PO Box 220, Wauchope, NSW 2446. Phone (065) 85 8283 or 87 6146.

COMPOST POWER

(The methods of Jean Pain)

There has been a great deal of interest in Jean Pain's brushwood composting methods *(Earth Garden 42)* from all around Australia.

We asked Raphael Verkest of the Australian *Antenna of Comite Jean Pain* if eucalyptus trees were good material for the technique. He tells us that brushwood compost is being made in Tunisia using eucalypts with great success and that any toxic materials in the raw material go out in composting.

People are needed to help in promoting the methods of Jean Pain, his book, *Another Kind of Garden* and to sell the large *Super Pain* and small *Mini Pain* shredders. Send SAE to Antenna of Comite Jean Pain, 60 Worongary Road, Mudgeeraba, Qld 4213.

Neil Druce of Tumbarumba, NSW, a permaculture design consultant, has a *Super Pain* shredder and has begun a brushwood mound using only native plant species including red stringybark, broadleaf peppermint and apple box, with some silver wattle and mistletoe.

"It's only 16 square metres so far," says Neil, "and of course it's too early to know how good the resultant compost will be."

Neil will give a paper on *Bio Thermal Energy* (Jean Pain methods) at the *Earthcare '84 Conference* at Wauchope, NSW, in October and may be able to have a shredder there to demonstrate brushwood composting.

He has formed, with others, the **Bi-Eco Foundation,** a non-profit trust to share the shredder and knowledge of permaculture methods. His address: PO Box 62, Tumbarumba, NSW 2653.

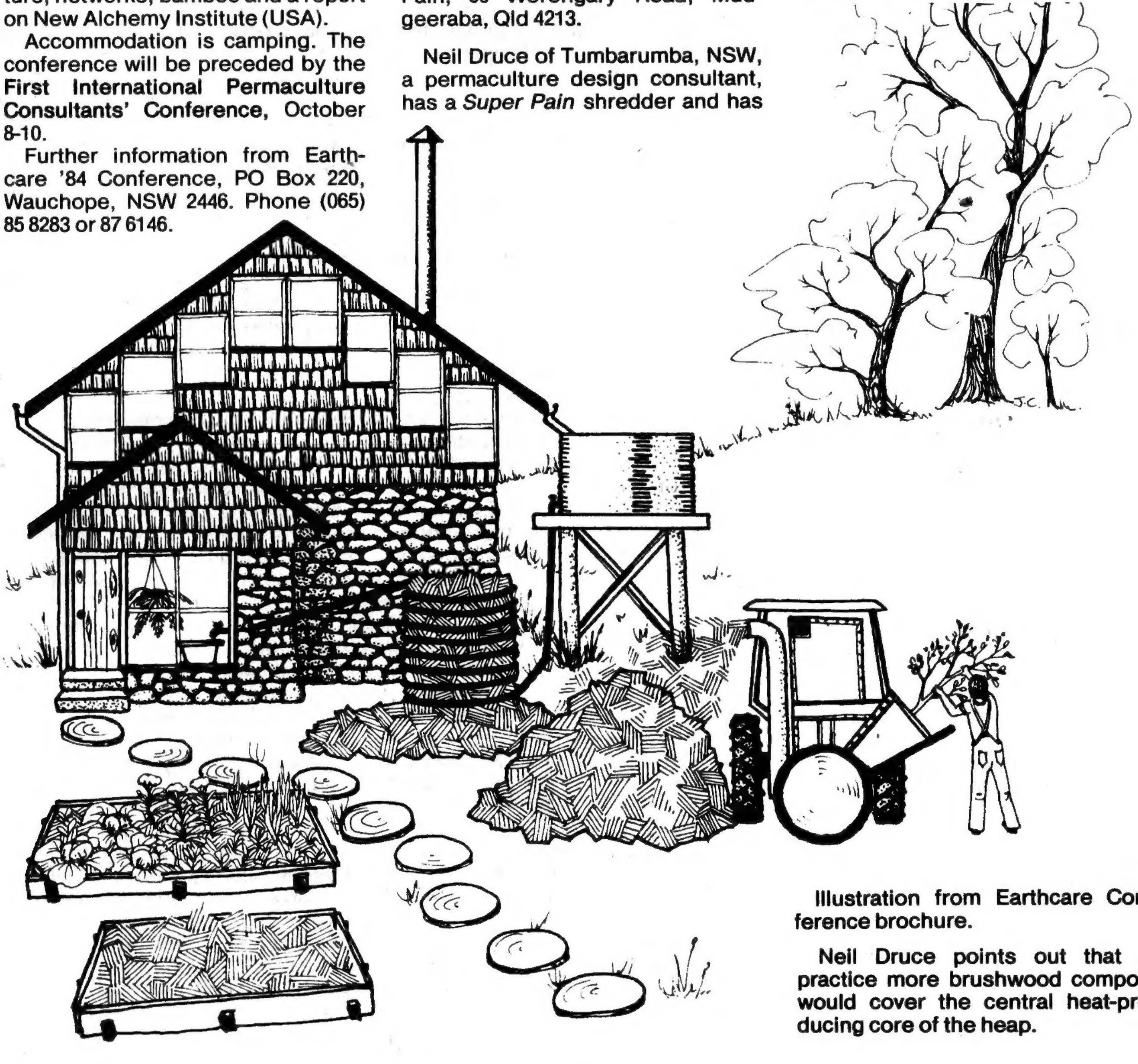


Illustration from Earthcare Conference brochure.

Neil Druce points out that in practice more brushwood compost would cover the central heat-producing core of the heap.

'Swallowfields'

Giant's Creek, NSW

By Graham Roberts

We first came to Giant's Creek, near Gungal, NSW, after reading an article *Buy a School* in *Earth Garden No 7* (December, 1973) about the Giant's Creek school being sold for a private home.

Like most folk I wouldn't have ever found this place except for EG. However, once having driven along its 12km road, you can't help feeling something about the peaceful solitude and unspoilt rural atmosphere.

The land we decided to buy and settle on some years ago is an area of 160 acres with Giant's Creek running between the paddocks. It is an interesting area with small cleared alluvial flats once used for dairying and timbered hills surrounded by thousands of acres of wilderness area.

The climate is very hot in summer and very cold in winter, with an average rainfall of 26 inches. However, every season has its joys and pleasures and we look forward to every change.

My nearest neighbour is about 2km away and at night the only light I can see is the moon or the stars and the only noise is that made by the elements, wind in the trees, rain on the roof, or birds.

The land has never been farmed and is in very good heart. No artificial fertiliser or insecticide has ever been used in the area so consequently there are lots of small birds and plenty of God's little creatures to live and share with us.

Three years ago, after a "domestic" I found myself living with my young teenage son and developing a lifestyle that is so different from the conditioning that I was schooled for. I read all about mudbrick building and made a few samples and had them tested at the Commonwealth Experimental Building Station. Although they passed the test, I decided that it would be easier for me to quarry and lay sandstone blocks as there is plenty of bush rock available on site.

So in 1981 we started to build our little country cottage. All the materials are secondhand or are obtained from the land. Timber was adzed from our ironbark forest, stone was quarried from the hillside and doors and windows came from demolition sales.

Our effort produced a lovely stone two bedroom cottage with a fuel stove and a cosy open fireplace. A brick-paved verandah all around and some lead lights have given it a comfortable atmosphere.

Most lessons I have learned the hard way, so I would like to pass some of my thoughts on to others.

You can only do so much in a day, so start near your back door and control your land from there. Plant trees and gardens in concentrated areas, so your energies (and your water supply) are not dissipated when it comes to tending young plants. Shelters for animals and equipment should be built in areas not far away from your energy supplies (water and electricity).

Don't get carried away with keeping animals until you can fence, house, water and feed them properly. I was guilty of this temptation because I love animals. But, unfortunately, they have minds of their own and tend to go wandering if the fences aren't secure.

Gardens take time to establish. You can't expect to get lots of produce in the early stages of development, so be prepared to go off to the local greengrocer. In the country vegies are generally fresh and cheap.

Don't expect too much support from "established" farmers. I have found they are very suspicious of city people, particularly those "organic" types on "farmettes".

It's easy to underestimate the cost of starting a farm

Bush stone building

Ever since my late Uncle John passed on to me his stonemason's tools I felt a great desire to use them.

He was a monumental mason by trade. During the **Hard Times** of the 1930s' Depression like many others he travelled around the countryside looking for work. He told me that to get a feed he would often "knock up" a headstone for some unfortunate, carving it out of bush rock.

With this background I feel some affinity with Uncle John each time I go out and cut or quarry a bush rock. I have a feeling that he is looking over my shoulder and guiding me as I use the same tools he used 50 years ago.

I like to wait until the cooler weather and then go out into the bush and choose a large stone that is reasonably accessible. As I don't like making tracks through the bush, I generally try to find a stone near the fringe of the forest. I also try to make sure that nothing is left to show that a stone was once there. For example, I would not like to leave a cut face.

Having chosen a stone, usually about two cubic metres in volume, I study the grain and decide which way to split it to get the maximum amount of stone for my effort. It is quite simple to see the strata in sandstone, so it takes only a short time to go on to the next step.

The next consideration is to make sure the stone is "free" on at least three sides. A stone won't split if it is held in compression, so with a pick and shovel I clear away any soil or other rocks and make a neat pile so as not to disturb too much bush. This material can be put back in the hole after the stone has been removed.

I don't have any electric or compressed air tools (they make too much noise), so I use a star drill and make a series of holes across the face of the rock in the general direction of the desired cut. These holes are about 300mm apart and about 25mm deep and are used as starter holes for the **gads** — small dumpy steel chisels.

When the gads are hammered into position I take a 15lb sledgehammer and hit the gads firmly a few times, each in succession. Don't bust yourself because the gads will do the hard work for you. Give each gad a hit until it is tight, then sit down for a while and listen to the sounds of the bush.

This is the best part of quarrying. While you are enjoying the peaceful surroundings, the little "soldiers" are putting tremendous pressure upon the stone. I generally give each stage of the initial cut about 10-15 minutes in between hitting the gads. After this time I again give each gad another few hits and tighten them up.

After making sure that each gad is working it's time to boil the billy. Usually after a good cup of tea the stone will have cracked under the pressure and will be split into two halves.

After the first split the rest is easy. You just keep splitting down to the size of stone you wish to use. I have found that a good size to handle is 825mm high by any length and about 150mm thick. I use a carpenter's square, a 5lb mash hammer, a bolster and a scrutch tool to trim each stone to size.

When these are cut, it's time to bring the tractor and trailer to the site to load up. No, don't go yet — make sure before you leave that all the broken stones and any other rubbish are placed in the hole and covered with the soil that was dug away at the start. I also like to get some leaf mould to cover the area.

There's just time for another cuppa before we go home with our load of building stone.

I have found this method much more fun than going to the local brickyard with a cheque book to buy plastic-looking bricks for building material.

What about laying the stones? I set up a stout piece of timber at each external corner of my building, making sure it is plumb both ways (use braces and pegs for that purpose). This timber represents the finished outside corner of my proposed stonework. Using a level (mine is just a plastic pipe filled with water), I set out the courses I am going to use and mark these with a saw cut on the timber uprights.

Once the first course is set out, I string a tight line from corner to corner and lay one side face of the wall. After I complete one face I would probably have a cup of tea while the wall sets a little. After "smoko" these stones are reasonably stable, so I proceed to lay the other face. I gauge off the line to keep a constant thickness. For single storey work I use 300mm thick walls and find this makes a good solid wall.

I do not grout in between the stones the same day because the pressure of wet cement would be too great for the stones to hold.

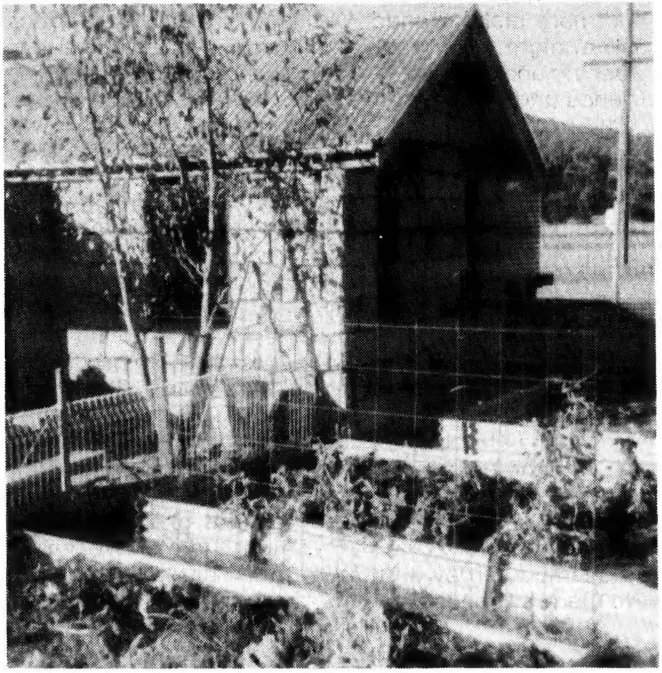
After a good day's work I sit down to enjoy a few glasses of local wine. Next day I go down to the creek for a load of sand and gravel. I like to use a coarse, sharp, gravelly mix as this seems to be the strongest when mixed 5:1 with cement.

When the cement mix is ready and not too wet I place it gently in between the two rows of stones that are now quite firm from yesterday's work. Paddle the wet grout in and make sure there are no voids. Normally I start another course of stone on a different wall so that each course is solid before proceeding higher. I also use **bricktone** between each course as I believe this makes the wall much stronger.

When all the walls are laid up, I go around with a small trowel and fill up any bad joints. Finally, I give the whole wall a wash down with some fresh, clean water and a little hydrochloric acid. Wash well once more.

I get so much pleasure when the job is completed, knowing that my house "grew" out of the earth around it. I do think that one of the main hints about stonework is that you can't rush it. Always take some time off to smell the flowers and enjoy your surroundings.

At right: Matt bringing in a load of bush rock for paving. Below: Our stone cottage and part of the vegie garden.



from scratch. Hardware is expensive in the bush and you need a lot of it — bolts for buildings, wooden gates and so on, roofing screws and washers, nails, roofing iron, polythene pipe, plumbing fittings, troughs for water, gate latches and hinges, fencing materials, water pumps and tanks. The list goes on. So before you leave the city it's a good idea to start a collection as lots of useful things can be salvaged from other people's scrap piles.

The tools I started with were adequate, but I have added to the collection since. I had a basic carpenter's kit, a bricklayer's kit, stonemason's tools and an old adze that I recycled, wheelbarrow, pick, mattock, square-nosed shovel, posthole shovel, crowbar, hoe, rake, garden tools, chainsaw (for green timber only) and a basic set of spanners for machine repairs. I have a good axe, kept hidden from city friends, and an old stone maul, which is given to city friends who insist on cutting wood.

I have followed Mr P. A. Yeoman's methods of improving the land (outlined in *Water on Every Farm)* and invested in a *Yeomans* 5 tyne vibrating plough and a 25 HP tractor. However I have found that this tractor is not strong enough. For anyone thinking of using the Keyline method, I would suggest nothing less than a 35 HP tractor to get the best value out of this plough.

We have to provide a basic income for the services from outside the farm including car registration, electricity, phone, local rates and travelling expenses, petrol, oil and tyres. To do this we decided to develop a small Poll Hereford stud. We have built our herd up to 30 registered cows and keep a stud bull standing.

We have improved our pasture and subdivided our place into six well-grassed paddocks. No "off farm" fertiliser has been used and with only chisel ploughing and seeding the results are very encouraging as we had good pasture all through the drought.

Our place, "Swallowfields" is in the wine country of the Upper Hunter River, so we have established a vineyard with 1,000 vines, both *Shiraz* and *Pinot Noir.* These will be trellised this winter as they are now in their third year. We are experimenting with companion herbs and geese to provide fertiliser and pest control. So far, so good, the results have also been encouraging.

We have a small flock of coloured sheep and spin our own wool for winter jumpers and a local lady does our knitting as Matt and I can't knit.

There are still many things to do and I am sure we will be working for years yet. However, we still try to cling to the basic philosophy of "Never do today anything you don't feel like doing" because if you do, you invariably don't give that job your full attention.

I could go on forever about the "good life" and would encourage anyone who feels inclined to have their own little place. I personally would not be involved in a commune. I am too much into being alone without any hassles (been there and done that). I would be happy to share my experiences and knowledge with any Earth Gardener, should they wish to contact us. Just drop us a line.

Graham and Matt Roberts, "Swallowfields", Gungal, NSW 2333.

No more Mrs Suburbia

Costerfield, Victoria

By Vicki Simmons

After reading *Earth Garden* for four years, I too can finally write of my experiences of "getting away from it all".

While living in the Melbourne suburbs with my husband Ross and three children, Richard 15, Simone 13 and Dylan 7, we planned our "great escape". That was eight years ago.

Of course we were going to build in mudbrick — was there anything else?

After travelling around most of Victoria, South Australia, Queensland and New South Wales looking for our "dream" piece of land, we found it quite by accident at Easter, 1982. It was perfect. Six acres with plenty of trees and wildlife, permanent creek frontage, fairly isolated and, of course, in our price range. We are 20 minutes either way from Heathcote and Nagambe (Victoria).

We started camping here at weekends and any other chance we had. We brought a bungalow up on a truck in one piece after we'd bought it for $150.00. Each trip back to Melbourne became more and more intolerable, so we finally decided to make the break in December, 1983. We sold the house, much to the disgust of Simone and Richard (there were no discos and roller rinks around the corner and life just wasn't worth living without them).

We had already had a 10,000 gallon concrete water tank put in, but it was by no means full.

With most of our furniture "boarding" with friends in Melbourne and two cars loaded to capacity with kids, dogs and odds and ends, we departed the rat-race. Ross and a friend had already driven up the day before in a truck and dropped off tea chests, fridge, washing machine and some furniture. We also borrowed two caravans.

When I arrived on the Monday, all I could see was six acres of mess. I almost turned back and headed for Melbourne.

Ross and a couple of friends had previously spent five weeks with picks and shovels digging the foundations and laying the slab in the wet areas, so our mudbrick "dream" was starting to take shape.

Did I have fun trying to fit nearly a houseful of bits and pieces into a bungalow and two caravans! That was four months ago and I'm still trying to find a spare inch or two to shove something else in.

Work on the house started off very well. The frames went up and the ridge beams and trusses and in no time the roof was on. I thought: Well, this isn't too bad at all (we did have help from some friends, which was great).

Then came the crunch. It was time to start making the bricks. That was at the end of February. We started off by carting clay from a block and mixing it in a bathtub (what fun!). Then the block was sold. As a local farmer had a pile of clay near his dam which he didn't want, it seemed the perfect solution to our problem. So off we trotted every morning at 7.30 am, full of enthusiasm (after dropping Richard and Simone at the bus stop) to make our bricks.

The farmer made a pit with his tractor and we started mixing and carting it to the moulds in a wheelbarrow — but it was only enough to make about six bricks. So we then loaded the mix into a tandem trailer and drove the car 100 yards or so to the moulds. We used to get about 50-70 bricks a load this way, but by the time we had shovelled the mix into the trailer, then out of the trailer and into the moulds, most of the day was gone.

I couldn't do much shovelling, I just wasn't strong enough, so Ross did most of it and I did the rest. We were averaging between 50-70 bricks a day, which was just not good enough. Some mornings we'd arrive to find that the mix in the pit was like a big rock, so we'd start to wet it down and mix it up. Another morning it was like a swamp because it had rained overnight and the plastic had blown off, so we began shovelling in more dry mix. We just couldn't win!

This went on for four weeks and I was getting more and more disheartened. We used to get home around 5.45 at night, thoroughly exhausted and then start tea, washing and so on. We did have a couple of days when friends and our future neighbours helped. It was great — 165 bricks in two hours. I couldn't believe it. But it was *more* disheartening the next day when it was just Ross and I and we made a total of 17 bricks for the day.

I was ready to give up and desperate enough to live in a triple-fronted cream brick veneer with venetian blinds and garden gnomes.

At that point a couple living a few miles away suggested that they help us for a few days and we help them in some other way. They were our salvation.

We also decided to hire the tractor from the farmer whose clay we were using. It was a very reasonable daily rate. Why Ross and I hadn't thought of mixing the mud with the tractor instead of by hand I'll never know.

With the help of Margaret and Denis and the tractor, we made 2200 bricks in seven days. We worked well together, so we decided to make the 1000 bricks they needed for the extension of their house. We finally finished yesterday with a total of 550 bricks for the day. We were all far too exhausted to even be excited. At least our mudbricks are all finished and once they are dried out we can transport them home and start laying them.

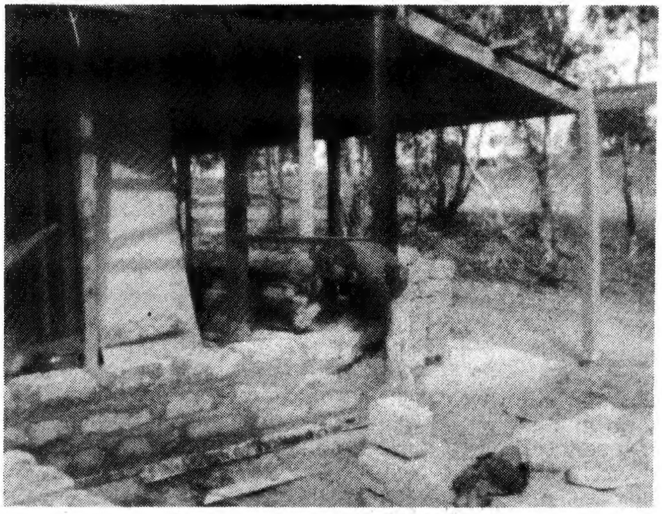
For anyone who is thinking of building in mudbricks, don't do it on your own. Try to arrange with friends to help. It's a back-breaking, tiring job. I *think* it was worth it. My friends kept telling me it would be worth it when we were finished, but my back and knees didn't agree with them. They still don't.

In the four months we've been here, we've had our share of problems. We are nearly out of drinking water and keep praying for rain (still none). We use creek water for showers and washing clothes, a major job alone. Someone had to climb to the roof of the shed to get to the header tank to fill it up. Usually it runs out of water just as I'm ready to wash the soap off myself.

My kitchen sink is outside (great in daylight saving time), so we wash dishes in the dark. At least the mossies don't eat you alive. The shower is also outside, so we shower in the dark and hope we don't slip in any horse manure on the way back to the bungalow.

The two burner stove is nearly on its last legs. The oven door doesn't close properly, so it takes hours to cook a roast and the scones taste like rock buns.

We have two dogs and a pet lamb who thinks she's a dog. She loves her toast and vegemite for breakfast, also cheese and tomato sandwiches (isn't that what all lambs eat?). My daughter is now the proud owner of a 10 month old pony who likes to come and visit us at the campsite and knocks all the dishes off the sink, eats my dishcloth and the toothbrushes and generally tidies up for me.



Ross lays the first mudbrick wall.

That was in autumn. We asked Vicki to let us know how building was progressing and this is her report in early July:

After leaving the mudbricks to dry for three weeks we then had to cart them all home in a tandem trailer. We were only able to fit in 60-80 bricks per load, so we did a lot of lifting and carting.

We finally started laying the mudbricks. At last I found something concerned with mudbrick building that I actually enjoyed. I did all the mixing and shovelling while Ross did the lifting and laying.

The walls grew slowly at first, but gradually we became more experienced and the process was a lot quicker. Most of the walls are up now and I have started rendering the internal walls. In between bricklaying, we have been lining internal walls with pine.

The solar electric system is hooked up and working, so we have lights now. The plumbing is almost completed and the windows go in next week. We are on the last stretch and hope to be in the house in 3-4 weeks, although it won't be fully completed.

Meanwhile we are still living like gypsies, still showering outside and generally living in not-so-pleasant conditions. We have been building for six months now, so we haven't done too badly. We've had a lot of laughs and a lot of bad times too, but now I'm looking forward to moving into our house and out of the bungalow.

I want to thank all our great friends for their help. Without them we would still be nowhere near finished. Thanks to our neighbours, the Munros, for the use of their earth and their tractor for the mudbricks.

I love it here and I could never go back to being Mrs Suburbia. I wouldn't have it any other way. So anyone who is thinking about making the break, take a deep breath, hold your nose, close your eyes and jump. The water really is much cleaner in the country.

BUILDING WITH ROCK

Field day with tutor Colin Clarke at Fryerstown, Central Victoria, Saturday, September 15 (other days in October to January, 1985 as demand requires). Fee $30.00, includes lunch and morning and afternoon tea.

Bookings (or $10.00 deposit to register) should be sent to Colin Clarke, "The Cornerstone Cottage", Fryerstown, Victoria 3451. Phone (054) 73 4359.

Colin Clarke is an experienced builder in stone. The course covers designing and building your stone home, methods of building walls in field stone, selecting good building stone, with demonstrations and the chance for "hands on" experience.

Colin uses a "freehand" stone masonry technique without formwork, with string lines and levels as a guide for horizontal and vertical straightness. He uses his eye to place each stone, trimmed a little if necessary, with the aim of showing as little mortar as possible on the face of the wall.

Gaps behind the wall facing are packed with mortar and stone rubble to provide strength. Colin works natural field stone, working the stone with hammer and chisel as little as possible.

He will show learner builders how to select the best stone to fill the gap and how to place each stone to balance its weight, making sure each face is vertical. Colin says his method "all up" is as fast, if not faster, than building with slipforms.

He will also demonstrate and teach the laying of **pitchers** — rectangular stones of uniform regularity, such as bluestone or granite, which are easily mined in regular shapes.

Book early. Further details, such as a map and a small list of tools to bring, will be forwarded. Primitive accommodation can be arranged in our beautiful double storey barn and bed and breakfast is available at motels and hotels in nearby Castlemaine.

— Ursula Clarke

earth people write

Dear Irene and Keith,

Could you possibly do an updated article on solar/wind power and the kinds of solar cells now available? Also, has anyone successfully converted a 240 volt fridge to 12 V? Has anyone invented a 12 V iron and washing machine?

Yours faithfully, Jeanette Hutchinson, Mt Chalmers, Queensland.

Dear Jeanette,

We hope to run a comprehensive section on solar electric systems in our next issue, *Earth Garden 44* (out in November). This will include a look at the new, "second generation" solar cells. We'd like to hear from readers on your other questions, so that we can pass on the information. You could try the Bamix hand-operated washing machine (Peter Pedals has adapted one to run on pedal power) — *Irene and Keith.*

Dear Irene & Keith,

Yes, we have taken the first step. Now to put all those hours of reading, talking and planning to work. It has taken six years to get it all together, but finally we have made it (or at least started to). Swapping three bedroom brick and mortgage, 240 volts AC, police uniforms and worry for home-made house, energy from nature and overalls, but most of all, peace of mind.

It seems hard to imagine, but we are starting to live our dreams. It feels great! I must admit **Earth Garden** has been our inspiration. From EG1 to EG42 each page read over and over again. Thanks for a great source of information and help, hard to explain but I suppose it was just what we needed to motivate us. Keep up the good work, it is really appreciated by a lot more than just ourselves.

Most sincerely, Kent and Wendy Farrell, Kadanga, Queensland.

Dear Irene and Keith,

Thank you for a very helpful and encouraging magazine. We are a family of four with a wheat and sheep farm. We try to live as self-sufficiently as possible. We have a large orchard and vegetable garden for a wheatbelt farm (organically grown). We use a Little Ark grain grinder for bread and flour.

We also have free-range fowls, ducks and a few turkeys — a bit too free-range. Richard pulled the old yard down 12 months ago to build a new one which he hasn't found time for yet. The poultry have multiplied and we are still getting lots of eggs. Thank goodness the orchard and vegie garden are fenced in.

Besides giving us some of our income the sheep also give us our meat and wool for spinning and even very dirty wool, too bad for any other use, makes a good mulch around the fruit trees.

In the book **Making your own cheese**, by Margaret Barca (Nelson), she writes: "In Australia, sheepsmilk is gaining in popularity." Could you or any **Earth Garden** readers please give me any information about this and would it have to be any particular breed? Any help at all would be much appreciated, as we have five pet sheep. Four are ewes and three look like they are soon to lamb. They're very easy to handle and fairly quiet, but they did get into the ram paddock when they weren't supposed to.

We aren't connected to the SEC power. We have a 32 volt power, plus a 24 volt motor for a pottery wheel. Also we have a kick wheel bought very cheaply second hand. Richard has built many farm sheds himself, including a three stand shearing shed, a large hay shed and a 21ft x 12ft shadehouse from second-hand water pipe for the frame.

We mainly use wood for cooking and heating. We do have a gas stove, fridge and kiln and a wood stove in the kitchen, also one outside for a barbecue in summer. While the kids have the barbecue going, I put bread, cakes or something in the oven to cook. We bought the old outside stove for $25.00 from someone who was pulling down an old house. We make our pottery glaze from ash from the solid fuel hot water heater.

I'll say bye for now as it's time to get the kids up for school and there's a pet lamb who wants a bottle.

Best wishes from Barbara, Richard, Jason and Michelle Greaves, Tammin, Western Australia.

Dear Barbara — In theory, any sheep may be milked, and all the fat-tailed breeds are milked for cheese in Greece, Yugoslavia and the eastern European countries. Milking breeds include the Fries Melkschaap from Holland and Lacaune and Larzacs from France, but we don't know if these breeds are in Australia (probably not). They are milked in the same way as goats. I'm reminded of a very groggy mulled ewe's milk served at a Wool Board lunch in the Old Crusty Cellar in Fleet Street on a cold winter's day in 1967. Hic! — *Keith.*

Dear Keith & Irene,

When the power of love
Exceeds the love of power
Then there will be peace.

David Reynolds, Tallangatta, Victoria.

Dear Irene and Keith,

We live on a property between Bathurst and Hill End in NSW and have sheep. We are really enjoying all the rain after the devastating drought. We all enjoy **Earth Garden** and have learned a lot. We've used no poisons in our vegetable garden for three years and amaze people as we have very little trouble with snails, etc. I'm sure this is the reason we are healthier!

Yours faithfully, Fran Bestwick, Duramana, NSW.

Dear Keith and Irene,

Just a note to say how impressed I am with your books, **HARD TIMES HANDBOOK** and **The Essential Earth Garden.** They are so interesting and informative. It is good to come back to basics where people are doing things for themselves instead of high powered technology where the individual often seems to be forgotten.

Yours sincerely, Lenore Clothier, Tumbarumba, NSW.

Dear Earth Garden,

I'm writing today because it's raining. First decent rain since Christmas — yipee! A day inside on bookwork.

I saw on television recently a survey about country people, their problems and so on. The reporter seemed surprised that country people don't rate monotony and boredom very highly. He seemed to think we were a queer kind of breed (or different, anyway). It just never occurred to him that these things don't exist! Actually a friend of mine tells me he's thinking of returning to the city (not seriously though) because he can't stand the pace!

We're having problems with the pace too, but we wouldn't change.

Regards, Kathy Kessler, Kia Ora, Queensland.

Dear Keith and Irene,

Have purchased a Retsel grain mill and am learning to get along with it. It is good exercise and the taste is terrific!

Now I am looking into wood cooking stoves. I would like to know if anyone has experience with the **Findlay** (oval), a Canadian make and how it compares to **Rayburn**. How well does it perform? How much space (wall clearance) does it require? Does it heat the kitchen excessively? The manufacturer's printed material does not give the views of a user. Maybe I could get in touch with someone with first-hand experience?

Sue Davison, PO Box 251, Coober Pedy, SA 5723.

Three farm systems

David MacMunn and his family moved to Gumboote Gully community near Uki, New South Wales, with their two kids in April, 1981.

"We now have an extra Gumbootian, aged two," says David.

"Kerry is a botanist and finds the area a feast of new plant species. I was a Captain in the Army before, but always had intentions of buying some land and finding a better way of living. Never thought of a community, though, until we saw Gumboote."

By David MacMunn

1. Hens in Pens

Not wishing to spend too much of my day doing chores (as opposed to tasks I wanted to do), I wanted our chook pen to incorporate easy feeding, easy cleaning and easy egg collection as a must.

It's basically a deep litter system. I use sawdust on the floor area to a depth of about 6-10 inches. Sawdust is easy to transport, good for the gardens once it's enriched — and it's free.

We rake the sawdust most mornings, depending on time and inclination. In general I add more sawdust after about three months and completely renew it about every six months. By that stage it enriches the trees and gardens.

The roost is about 32 inches high and it works well. A tray underneath collects droppings. About once a week these are cleared out and put in the drum at the rear of the pen to be used as garden fertiliser also.

The watering system is also self-contained. Water collected off the roof is stored in an upright 44 gallon drum. A feeder hose connects to a tap which supplies the water trough, which is actually an old vegetable crisper from a refrigerator.

We store feed at present in a lidded tea chest raised off the sawdust. An airtight container of metal or plastic would probably be better. The nesting boxes are underneath the roosting shelf, but I have to admit that the chooks won't be guided and actually lay all their eggs between the nesting boxes and the wall of the pen.

Eggs are collected through a back hatch, which saves crawling under the roosting shelf.

To build the pen I used bush poles, a tin roof and tin on the back walls around the roosting shelf to full height and also one width of tin all around elsewhere to retain the sawdust. Chicken mesh is used to roof height on these walls. I included a metal retainer around the door area to allow the door to swing.

There you have it. A few final points. I let the chooks roam outside for about 1-1½ hours each day so they don't feel housebound (and so that their yolks don't get pale and insipid).

I built the pen close to the house so the upkeep is easier and it's also closer for warding off goannas. I build it high enough for me to be able to walk in and out because we already had a "chook tractor" and I hated having to crawl inside it.

It may sound like a fair bit of effort to go to for chooks, but our chooks have paid it back well by good egg production. Some of the ideas I used came from the article *Poultry Housing* in Vic Marks' *Cloudburst*

Chook pen, showing drum water storage and trough.

Feeding time, with a comfrey snack for the hungry hens.

(Cloudburst Press, Mayne Island, Seattle, USA, 1977), which has some other good suggestions.

PS. Bloody chooks! Just when they have become near celebrities in this article they have gone off the lay completely and we are buying eggs from a neighbour at the moment.

2. Poles in holes

Like a lot of people in my area of northern NSW I am building a pole frame dwelling. The undeniable weak link in this technique is that the poles (actually 23 of them) are embedded in the earth, so I have given a fair bit of thought to coping with that problem.

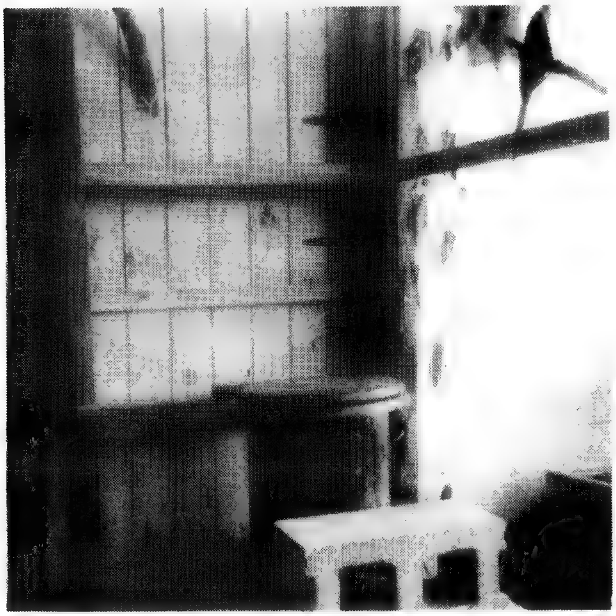
Before embedding the poles I cut the sapwood off each pole where it would be under the ground and coated the ends, first with creosote and then with tar. I went a bit overboard with the holes — they ended up 5ft down as I wanted to make up for an expected difficulty in diagonal bracing.

It made me feel that if building didn't commence I could always start a graveyard featuring vertical interment! The poles sat on large flat river rocks and were backfilled with the original earth. Later I added diagonal holes bored into the poles which were plugged after filling with poison.

That's what I did. Now for what I could have done and here I must recognise the advice of the local *Flick* man, who proved helpful and not by any means a "hit 'em with poison" man. These measures are designed chiefly against termite attack.

I could have charred the ends of the poles being embedded, which is an old-time method. I could have soaked the poles in creosote. The most efficient way, apparently, is to have a drum of hot and a drum of cold creosote. By immersion first in the hot drum and then in the cold drum, the timber soaks up more of the creosote (a method covered by Brian Walker in *Preserve your fence posts, Earth Garden 20).*

I could have poisoned the holes (I'm glad I didn't though) by filling each hole with a pre-dinner drink of, say 90-10 kerosene to creosote (4 gals), or used, dare I say it, *dieldrin.*



The dunny — a place where no waste is ever wasted.

I could also have encased the poles in concrete, but I believe there would still be problems. Firstly, the concrete draws moisture out of the soil, aiding timber decay and secondly, as the concrete sets it draws back minutely from the pole, leaving a gap for moisture to penetrate.

Next time if I was building with poles in the ground, I would probably do it this way.

1. First, I would select a timber which is suitably durable and resistant to lictus borer. As well termite resistance should be considered. This is just a guide and when you hear stories of what termites can do, you suspect that some day, somewhere, termites may chomp up another supposedly resistant timber.

2. I would strip the bark (obviously) and sapwood off the timber to above ground level.

3. Here's where paranoia would have to fight my concern at putting poison into the ground. I would have to think about using 4 gals of 10% creosote and 90% kerosene in each hole and then backfill and tamp the earth. I couldn't come at deildrin.

Some maintenance will still be required regardless of all these measures, so I would attempt to make the anchorage of the poles to the sub-flooring suitable to allow jacking close by and replacement of the poles.

Or then again, maybe a concrete slab . . .

3. An inevitable problem.

As inevitable as death is the problem of getting rid of human wastes. In seeking a solution to this I have tried to employ the waste with a minimum of physical work.

For liquid waste I have improved on the beloved wee bucket. I use a 4 gallon bucket filled with sawdust. On top of this I have independently mounted a toilet seat and cover.

This will normally last our family of five for about a week. There is no smell whatsoever until the sawdust is saturated. I then simply tip the enriched sawdust around citrus, banana or any trees requiring a "nitrogen hit" and start again.

For solid waste I have retained a can system. I believe that human waste is valuable, so why wash it away or fill a huge hole with it? I use 2 x 4 gallon drums which I rotate through until both are full.

Like most people using this system we add either wood ash or sawdust to cover the waste. In my banana patch I have dug a long trench, about 30ft long, 3 feet wide and about 3-4 feet deep. I deposit the waste from the buckets into the trench (I use two buckets because I prefer an even load to carrying one heavy bucket). This is covered by a corrugated iron plate which I move along the trench as it is filled to stop earth entering the unused part of the trench.

When individual trees are to be planted I use the waste underneath them. But the trench method allows quick but useful disposal of waste. I simply plant on top of the filled-in trench.

I guess all this is not worth thinking (or talking) about to some people, but I think that if you can use a system which has low maintenance and employs the waste usefully, without relying on 8 gallons of water per flush to dilute it and transport it away, you have coped with an ever-present aspect of self-sufficiency in a constructive way.

Refining the bush shower

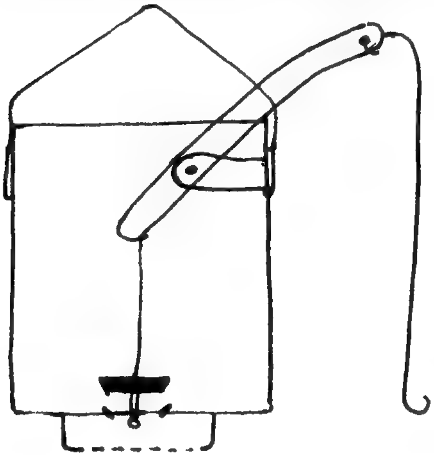
By David MacMunn

The new shower.

I enjoy showering outside, especially in summer. So when our archaic bush shower, illustrated here, decided to commit suicide, we needed a new setup. It had fallen down, just missing a guest, and what appeared to be a condition requiring cosmetic surgery turned out to be terminal.

What I wanted from a new system was reasonable water capacity, easy on-off control and good water flow. I happened to have a shower rose, so that became the first component included. A malt drum of a few gallons from the local home brew shop provided the water container. They are new and clean and I can accept the vague advertising "hit" of the drum lettering included in each trip to the shower.

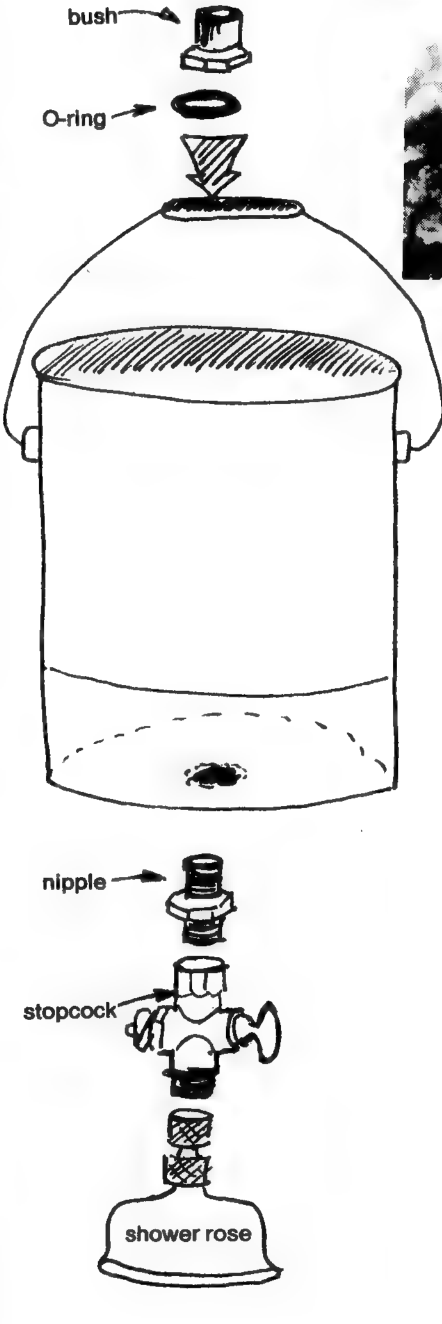
Now I had to connect the container to the outlet and I'd be right. So I came to the on-off control. I had a choice of a stopcock or a gate valve. The gate valve, while being cheaper, would involve a lot of turning to stop the water flow. With thoughts of a biting wind whistling through exposed privates while I twiddled the gate valve for 5-8 revolutions, I decided on the stopcock.



The old bush shower.

The old bush shower was quite ingenious. By pulling on the wire the long bar pivoted, pulling up the plug (as far as it would go). This allowed the water to pass through to the bottom section which was perforated like a shower rose.

See *A bucket shower* in HARD TIMES HANDBOOK (page 220) for an outdoor shower which is a cross between these two.



Details of the refined bush shower.

The shower rose neatly screwed on to the appropriate stopcock. At the other end of the stopcock was connected a galvanised nipple which fitted through a hole cut with a cold chisel in the bottom of the drum. From here I attempted to have the nipple welded to the drum. Not enough thickness in the drum, they told me. So I used a bush tightened onto the nipple thread, sandwiching a rubber O-ring between bush and drum.

A good smear of silicon sealer around the outside of the cold chiselled hole and I was home and hosed (or rather, showered). Finally, I added a piece of flywire on top of the bush to keep out leaves, etc.

This refined bush shower has now been in action for some six months and I'm still happy with it. There is one tiny problem. Because the outflow comes up into the drum there is a small amount of water always left in the shower drum. It can make the first couple of seconds of an expected piping hot shower rather annoying. We just tip out before refilling and anyway it's good to have a few surprises for our visitors!

Costing

drum	$ 1.00
shower rose	$12.00
stopcock	$ 6.50
nipple, bush, O-ring	$ 2.00
total	$21.50

Incinerator hot water

By Peter van der Wyk

I had picked up an old gas hot water system that had been thrown out. There was nothing wrong with it. It was a very common hot water system composed of a gas ring inside and underneath the insulated water tank through which a chimney goes straight up the centre and out through the top.

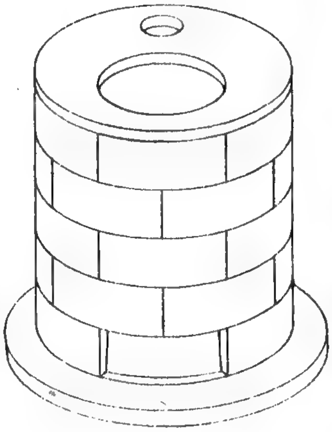
The water tank more or less acts as a water sleeve around the chimney being heated up at the base and by the hot gases passing up through the chimney.

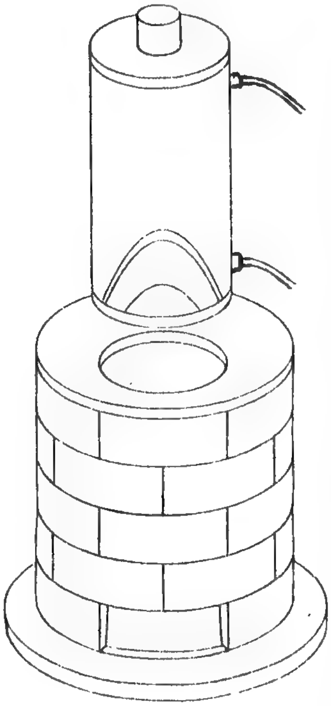
I had modified it for bottled gas (LP gas) and found it worked very well but it was expensive to run because it used so much gas. I wanted to make good use of it as I didn't have the luxury of hot water on tap at that stage. All I needed was to provide a cheaper flame as a heat source.

I then had the brainwave of marrying my common old garden type hot water system to my common old garden type incinerator, a marriage which I am sure is not often conceived or contemplated.

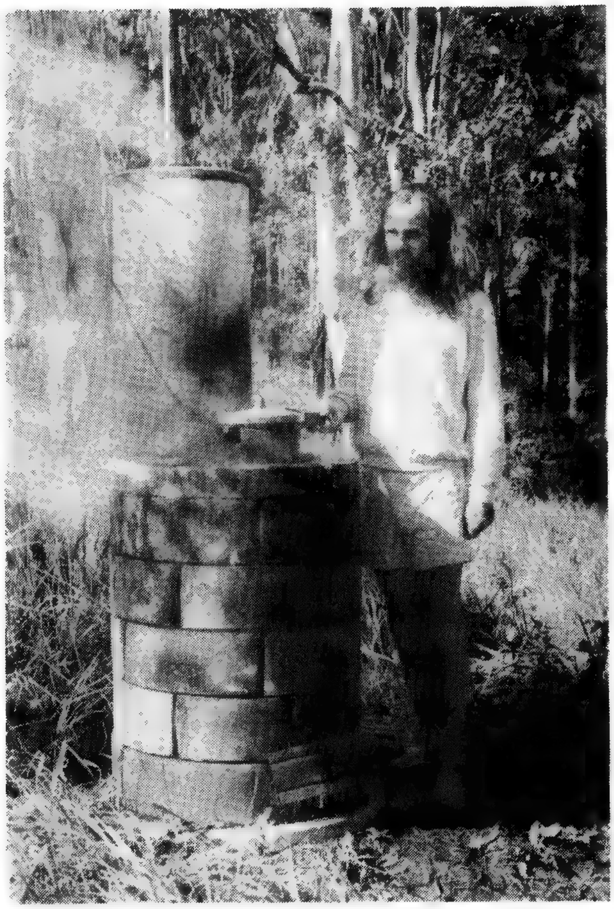
I had a concrete block type of incinerator. There was a concrete slab on the ground with a series of moulded concrete blocks (like oversize bricks) creating a large enclosure on top of the base slab. One of the concrete blocks of the bottom row was deliberately left out to let air into the fire and to take out the ashes.

At the top was placed a smaller concrete slab with a small hole at the back into which a chimney was fitted and a larger hole at the front with a metal lid to close it up.





PETER'S PLANS
Write to Peter for plans, at $5.00 each,
Address: PO Nimbin,
NSW 2484.



So I removed the gas burner from the water heater and cut a large hole in the base of it so that I could place it on top of my incinerator and it could then act as the chimney for the incinerator.

I then connected the poly pipe that provided my water pressure from a holding tank further up the hill to the inlet of the hot water system and a standard half inch brass tap to the outlet.

I made up a very cheap system to mix hot and cold water by using all garden watering connections. I screwed a plastic two-way adaptor onto the hot water tap. On one side of the two-way adaptor I screwed a hand sprinkler that looks very much like a shower rose. On the other side of the adaptor I screwed a garden hose connection with a hose going to a nearby cold water tap.

Next I collected an incinerator load of rubbish and burnables and incinerated them. Twenty minutes later I found the water to be boiling hot and the fire still burning, so I forced myself (without too much effort) to have a hot shower in order to use up some hot water before it overheated. The hot and cold water mixing worked well and the shower was wonderful.

I have since learned the art of judging the size of the fire to suit my hot water needs as this is the only way of controlling the heat. Apart from that it is a simple but brilliant system that has now given me several years of satisfaction and hot water for all my needs.

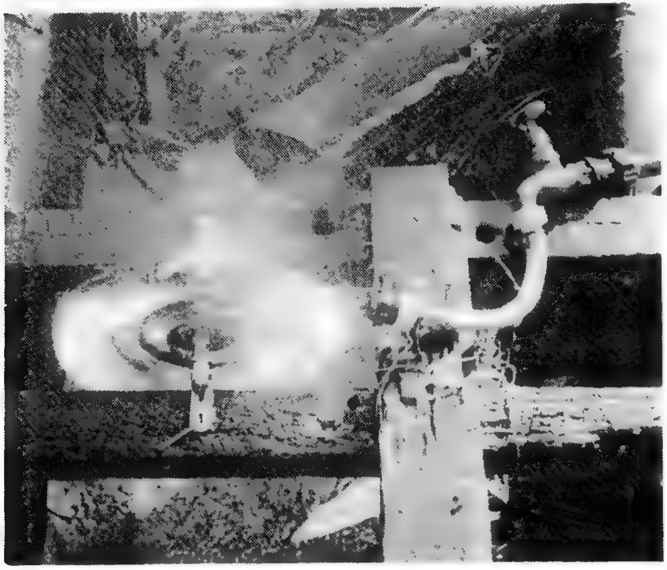
This is the kind of alternative energy we should see more of. It is cheap in initial outlay (if you don't buy a new hot water system), cheap in running costs (you can burn anything you like), easy to install and can be added to at a later stage.

DYNOHUB PELTON WHEEL

The Pelton Wheel, or impulse turbine, patented by British engineer Lester Pelton in 1880, is powered by the impact of a jet of water against curved cups or buckets attached to its wheel.

Small diameter Pelton Wheels of cast steel, bronze or aluminium alloy are available commercially in Europe and the United States, but cost between $400 and $1,000 each.

Peter van der Wyk, alias Peter Pedals, our inventive pedal power correspondent, took a Sturmey Archer *Dynohub* (bicycle hub dynamo), some poly pipe and plastic nozzles (to direct the water flow) and put them together with $3.00 worth of stainless steel soup spoons from Woolies (the cups) to make the prototype Pelton Wheel shown in the photos. It provides him with 8 amp hours of 12 volt electricity every day. Peter's total cost was $6.50 in addition to the Dynohub!



By Peter van der Wyk

I've recently moved house to Blue Knob, near Nimbin (NSW), where I am a shareholder on a property high up on a mountain slope which has a creek running through its full length.

We get our water supply through poly pipe from the highest point of the creek. As we have plenty of available water pressure, the shareholders intend to use it as their major source of electricity.

I decided to build myself a small hydro-electric system using a bicycle hub-dynamo Pelton Wheel (using the trusty Sturmey Archer **Dynohub**), which now serves all my electrical needs.

Each of us will eventually have a Pelton Wheel mounted on top of our water tank. The overflow from the water tank will then go down through a pipe to the next site, whose owners will use the same water to run their Pelton Wheel and to fill up their tank.

The overflow from the final tank will go back to the creek at the bottom of the property. We will also be able to drive all sorts of mechanical gadgets directly by water pressure.

There are lots of people around Nimbin who rely on Pelton Wheels for their power. Most of them use car generators or alternators to produce the electricity. A better system is to use a washing machine motor as a generator (we have one running at Blue Knob now), but this level of technology is a bit complicated. I don't think you could get much simpler than the Dynohub Pelton Wheel. It requires very little water to drive it, but there is still enough power to be useful.

Nozzles. For the nozzles which direct water at the spoons I use plastic nozzles from **Waterbird** irrigation sprinklers, with the sprinkler part cut off. These nozzles are very small and are just the right size range to suit the Dynohub. They come in about five different sizes.

A threaded plastic holder on the end of the hose allows me to use different sizes of nozzle for different water flows.

Spoons. The spoons are bolted onto the blades of a car generator fan that came out at right angles. The car generator fan in turn is bolted through the spoke holes of the smaller of the two flanges of the Dynohub.

Wires. The wires from the Dynohub go through a small full wave bridge rectifier as with the bicycle wheel wind generators (see **Earth Garden 39 and 40**).

I am using about four litres of water per minute. This system supplies me with a continuous 0.3 to 0.4 amps, 24 hours a day. That's 8 amp-hours per day, day after day, regardless of changes in the weather.

That makes it competitive with a $400 photovoltaic (solar cell) system, with the added advantage that a smaller battery bank is sufficient. With a solar system you need a reserve of battery storage to cope with periods of overcast weather. With a wind generator system you need a larger battery bank again.

By placing the Pelton Wheel above a water tank it can be used to keep the tank full while the overflow goes down to the next house.

Costing. On top of the cost of the Sturmey Archer Dynohub itself (which I already had), the cost to me was:

stainless steel spoons	$3.00
12 self-tapping screws	$0.50
wire	$1.00
1 amp bridge rectifier	$1.00
hose connector and small nozzle	$1.00
total	$6.50

I found that the cheapest set of stainless steel spoons, from Woolworths, are as good as any others.

THE DISAPPEARING DYNOHUB

There is one hitch with Peter Pedal's bicycle wheel technology for the Pelton Wheel and that is that they depend on the well known Sturmey Archer Dynohub, a small generator which works on the hub or centre of bike wheels.

Peter was dismayed to find that Sturmey Archer, of Nottingham, England, no longer manufacture the hubs because the introduction of British and European standards for lighting recently means a redesign and major reinvestment by the company which it considers uneconomical.

Peter writes: "I have found the Dynohub to be a brilliantly conceived design that suits my power needs in every possible way.

"It is a totally sealed, weatherproof unit that operates at a very high level of efficiency and is designed to produce a reasonable voltage at very low revs with a minimum of frictional losses.

"To describe it in more technical terms, it is a multi-pole (12 poles) permanent magnet alternator. It is a brushless alternator with the only points of contact between the rotor and the stator being adjustable cone ball-bearings."

Peter would like to hear from anyone who has a good second-hand Dynohub in good condition, or about anyone, such as bicycle shops, which may still have a quantity of new Dynohubs. His address is C/- PO Nimbin, NSW 2484.

Remote power systems

STATE OF THE ART

A national market research study of remote power systems was recently completed by Australian Industrial Research Pty Ltd. Architect Rodney Jensen *(Solplan House,* Earth Garden 40) acted as technical consultant for the study and reports some of its main findings.

By Rodney Jensen

Many parts of Australia do not enjoy the benefits of reticulated or "grid" electricity because of the high costs of transmission over distance. Remote homesteads are forced to generate their own electricity and at present have three basic options — conventional diesel generator sets, wind turbines or solar panels.

There are other systems such as hydro, solar thermal, bio-gas, wave and tidal generators, but these are rarely found in Australia on a small scale if at all.

Diesel generators

Conventional diesel sets combine a diesel motor with an alternator and usually provide 240 volts alternating current (AC) electricity, unlike wind or solar systems. This is a great benefit from the user's point of view. Conventional generating sets are also more economical in terms of capital cost per rated kilowatt, but more expensive to run. The high running costs are often increased by mismanagement and it is a common practice for farmers to have a large generator (up to 12 kW) running just to power a few lights and the television.

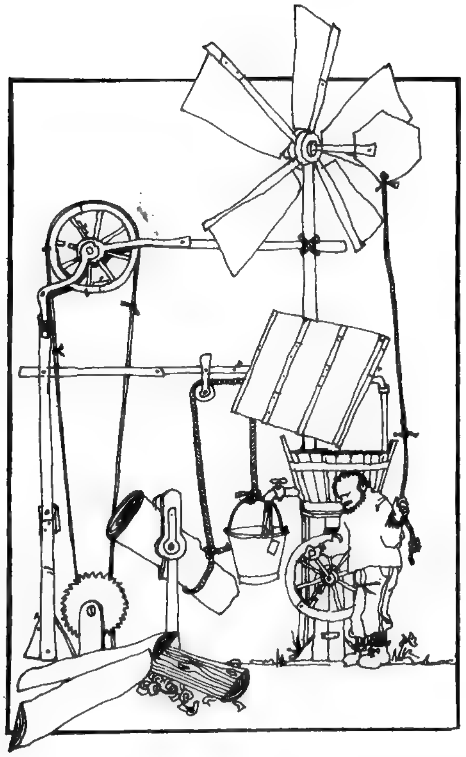
Diesel sets are most fuel efficient at full load conditions and become uneconomical when lightly loaded. There is much scope for reduction in peak power demands by simple management practices and the possibility of introducing electricity storage to handle heavier loads and to keep the overall scale of the system down to improve fuel economy.

One homestead visited during the study, which was designed along passive solar principles and also had a solar water heater, was able to make effective use of less than 1 kW generator capacity. This is in marked contrast to the norm, which requires 6-8 times more generator power because of built-in inefficiencies in most homesteads.

Wind power

Wind electricity generators are only likely to be effective and economic in areas of the continent that have an annual wind speed of about 22 km/h. Few places in Australia are this windy, but parts of Tasmania and the coastal areas of WA, SA, Victoria and NSW do have some promise.

Much work is currently in progress to evaluate wind environments on a regional basis, but the determination of the feasibility of a specific site calls for more precise and long-term measurements of the wind regime as well as a physical appreciation of the landform and obstructions to windflow from all directions. For this reason it is difficult to predict the feasibility of a wind turbine in marginal inland areas and many homesteads have found wind power in the past to be an unreliable source of power even on a limited basis as a lighting plant. Such households have in most cases "upgraded" to diesel sets and would not go back to wind power in spite of the great advances that have been made in electronics and aerodynamics that make wind power far more viable today than it was in the past.



Resurgence

In spite of these reservations there have been recent studies in King Island, Tasmania, showing small windplants in this location to be the cheapest power source, using a present day value analysis. There is also currently a good deal of interest in WA, Victoria, NSW and Tasmania on the potential for large turbines (50 kW and higher) to be optimally sited and feed electricity into the grid. The author has also experimented with a small second-hand plant in the Hunter Valley, NSW, and found it to have some application on the "hobby farm".

Perhaps the greatest problem facing small windplants and solar cells is the need to store electricity in lead acid batteries and invert the stored direct current (DC) voltage to 240 volts AC. Batteries are an expensive recurring cost item and we found many users having to renew battery sets within three years rather than 10 as claimed by many of the references.

Inverters are also expensive and inefficient devices and much research is taking place to improve their performance. Improvements in the storage and inverter system would greatly improve the feasibility of wind and solar systems.

There is also the possibility of having a separate low voltage DC circuit for lighting and some appliances, but for the majority of users this is at present regarded as "sub-standard" or impractical.

Solar electricity

Solar cell (or photovoltaic) panels offer the greatest promise of the alternative options because Australia has a high level of insolation (sunlight, or solar radiation falling on an area), and the technological advances and consequent economics of solar cells are becoming increasingly attractive.

Their main drawback is the high capital cost (about $10 per peak watt, not including the cost of inverters, batteries or installation). Like wind generators, batteries and inverters are required and the cost of a system that can compare with a conventional diesel set may be as high as $30,000.

As in all energy conservation evaluations a discounted cash flow analysis of the alternative systems must be made to show the full picture of the savings that accrue during the lifetime of the system. In some systems, solar can be shown to be feasible, for example where the transport of diesel fuel over long distances adds considerably to the running cost of a conventional plant.

The biggest market for solar cells is at present in government departments, most notably Telecom, who opt for solar cells because of their reliability, service-free operation and elimination of fuel transport.

Very few remote homesteads as yet are using solar cells because of the high capital costs. There is, however, a distinct and growing market among commune and alternative lifestyle "urban refugees". Such groups are usually living at subsistence level and have scaled down their power needs so that a far smaller installation (under $1,000) is put into service, perhaps consisting of one 450 watt solar panel and storage batteries to provide for very basic lighting and appliances.

As noted previously, houses that are designed for energy efficiency are far more likely to be able to make effective use of "mini" power sources. Generally the people in this market are far more aware of energy conservation and management than the remote homesteaders. Surprisingly, research projects and the industry have concentrated on competing with conventional generators more than on providing for the mini market.

Hybrid systems

An important conclusion of our research into the available options was that putting together the "good" attributes of each:

- diesel generators — low capital cost per rated kilowatt,
- wind generators — lower cost per rated kilowatt than solar cells,
- solar cells — reliability of sun, limited servicing

requirements suggested a hybrid system involving two or three of the above in combination.

While there is nothing new about hybrid power systems, to date research has concentrated on large-scale systems (5-10 kW of renewable power), rather than on a mini system which could be more in tune with market requirements. A total electronic system involving 1 kW renewable power with a small auxiliary diesel generator appears to have considerable potential but will also require the development of a satisfactory "black box". This would sense supply and demand conditions and switch in appropriate generator combinations to meet demands, channelling surplus power to storage as well as inverting the DC supply to mains voltage and frequency.

In the next decade we will undoubtedly see great strides in this field because although people are "aware" of alternative systems, they are at present deterred from investment by factors such as high capital cost, limited systems options and lack of information about the new products that are available.

Low voltage wiring

By Greg Baker

The size of the wire or cable used in low voltage direct current (DC) systems is important. This is because the wire acts as a resistance to current flow and hence causes voltage losses.

If the wire used is too thin the resistance is high and voltage losses can be large. A significant proportion of the low voltage supplied can be lost. This can lead to voltages which are too low for the equipment being operated and either results in equipment which does not operate satisfactorily or does not operate at all. It can also mean unacceptably high power losses from low capacity battery systems.

On the other hand, **if the wire is too thick** you will be paying more for the wire than is really necessary.

As a guide to wire sizes to keep losses low, I have prepared two tables. One is for when 0.5 volts DC is considered an acceptable voltage loss; the other is for when 1.0 volts DC is acceptable. The tables are applicable to any low voltage system, eg 12 volt or 24 volts DC, and also ensure that wire current carrying capacities are not exceeded.

Length of wire from battery via switch to equipment and return to give a voltage loss of no more than 0.5 volts DC (metres)

Current in	Standard wire size (mm^2)				
Circuit (amps)	1.0(a)	1.5(a)	2.5(a)	4	6
1	28	42	(b)	(b)	(b)
2	14	21	35	(b)	(b)
3	9	14	23	37	(b)
4	7	10	17	27	41
5	(c)	8	14	22	33
6	(c)	7	11	18	27
7	(c)	(c)	10	15	23
8	(c)	(c)	8	13	20
9	(c)	(c)	7	12	18
10	(c)	(c)	7	11	16

Length of wire from battery via switch to equipment and return to give a voltage loss of no more than 1.0 volts DC (metres)

Current in	Standard wire size (mm^2)				
Circuit (amps)	1.0(a)	1.5(a)	2.5(a)	4	6
1	56	(b)	(b)	(b)	(b)
2	28	42	(b)	(b)	(b)
3	18	28	46	(b)	(b)
4	14	21	35	(b)	(b)
5	(c)	16	28	44	(b)
6	(c)	14	23	37	(b)
7	(c)	(c)	20	31	47
8	(c)	(c)	17	27	41
9	(c)	(c)	15	24	36
10	(c)	(c)	14	22	33

NOTES:

(a) Single strand wires. Multiple stranded wires imply shorter lengths for the same voltage loss.

(b) Assumed too long to be practical.

(c) To maintain current carried in the wire to no more than 0.25mm sq/amp (for safety reasons) these not recommended.

How to use the tables

1. Select an acceptable voltage loss, ie 0.5 volts or 1.0 volts DC.
2. Calculate total wire length.
3. Calculate the current flow in your circuit. This is found, approximately, by ignoring wire resistance and dividing power (watts) by voltage, eg a 20 watt light on a 12 volt battery draws about 20/12 — 1.7 amps. Say 2 amps for using the tables.
4. Using the selected table and the selected row read, for each of the listed standard wire sizes, the maximum length you can use to keep the voltage loss below the selected level.

Example

For a circuit using 6 amps and an acceptable voltage loss of 0.5 volts DC, up to 7 metres of 1.5 mm^2 wire can be used, or up to 11 metres of 2.5 mm^2wire, etc. If the length calculated is 6 metres, use 1.5 mm^2; if it is 12 metres, use 4 mm^2 etc.

STRAIGHT RUNS

Stephen Pascoe of **Sunstream**, who supplies cable for 12 volt systems, has this advice: "The best way to avoid voltage drop is to use short runs and thick cable." Sunstream's catalogue covering low energy electrical systems is free from 17 Giselle Street, Wyoming, NSW 2250.

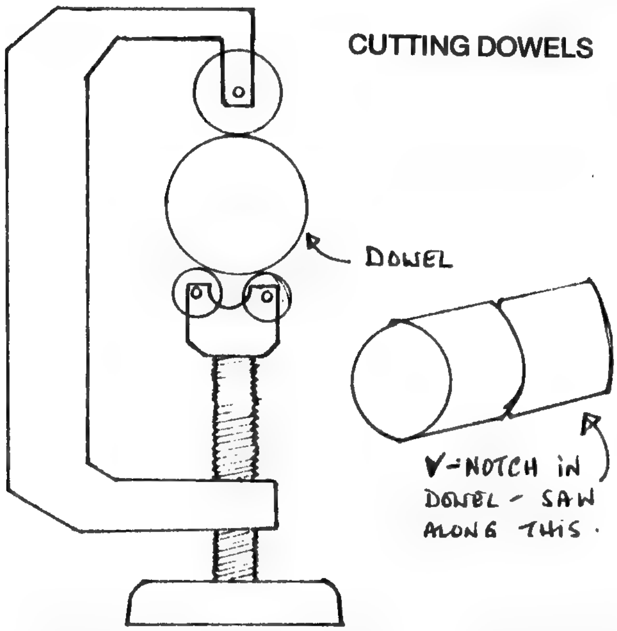
FIRE WARNING

A 12 volt power supply is just as likely as any other voltage to cause a fire if a short circuit occurs.

Make sure you use suitable 12 volt fuses near to the battery and other power sources, or use other safety devices.

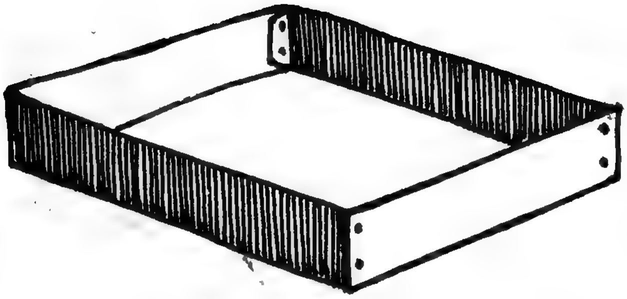
Peter Van der Wyk

CUTTING DOWELS



To obtain a straight cut through a dowel, first score it with a tube-cutter. This will leave a shallow v-notch right around the dowel. Simply saw along this guideline for an accurate straight cut.

Ken Lee, Minmi, NSW.



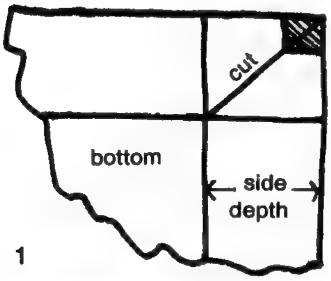
HANDY PANS

How to make pans, boxes and trays from sheet metal.

By Peter Squires

I have developed an interest in the lost art of sheetmetal work and I would like to pass on some older style methods of making sheetmetal pan corners. This type of work is becoming a rarity now that pressed pans are available for the home and workshop for all those odds and ends.

I inherited a 500 page book called **The Practical Plate and Sheet Metal Worker** (1936) from my Uncle. Coupling this with my sheetmetal trade (I did an apprenticeship) and a course in the Development of Sheet Metal at RMIT in Melbourne and, of course, listening to the old-time farmers I have learned new (or should I say old) skills ... skills which I never thought I had.



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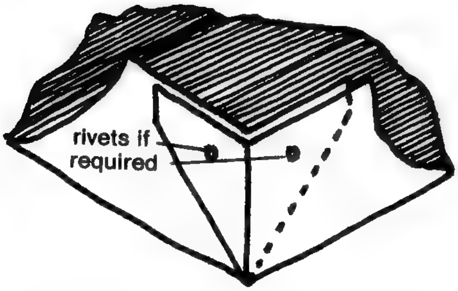
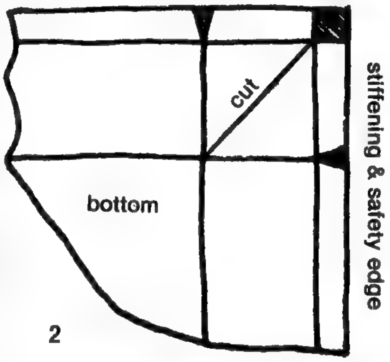


1. Possibly one of the strongest pan corners is the **double lap**. The diagram shows how to mark out the pattern for one corner. One lap is turned outside the pan and one lap is turned inside the pan and riveted if it is made of heavy metal or soldered if lighter metal is to be used, or if the pan is to hold liquid.

Pattern: Mark the bottom of the pan to given dimensions, add side depth and cut along the corner or diagonal line. It's a good plan to cut out the corner as shown by the shaded area. If heavy gauge metal is used, flaps may be riveted as indicated in the sketch.



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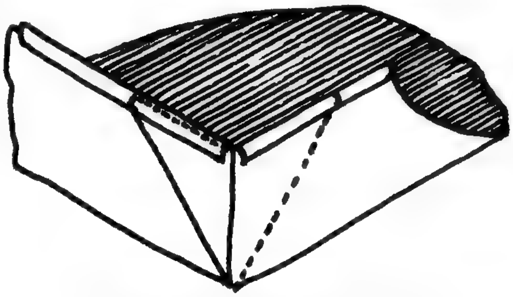


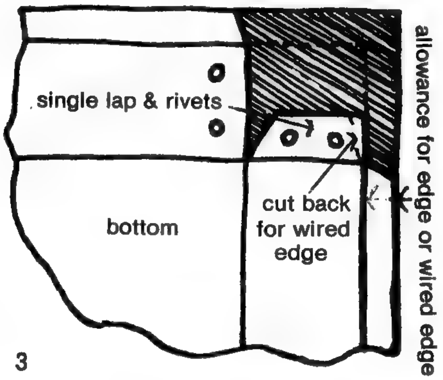
2. Same as for the double lap, but in this case the pan has an edge for gripping laps and strengthening the sides as well as acting as a safety edge. This corner needs no riveting or soldering unless it is required for holding a liquid.

Pattern: Proceed as for a double lap and add on the size of the required edge. If the edge is left on the flaps one can be turned over the other under the side edges as shown in the sketch. Notch shaded areas so metal is not too bulky at corners. All four corners are made in the same way.

3. Single lap and riveted edge. Allowance is made either for a turned-over edge or for a wired edge. Rivet holes can be marked out on flat metal or drilled after being bent into shape.

Pattern: Mark out the bottom to the required dimensions and add side depth. Leave allowance for lap edge and notch as shown in the corner and on the edge (as shown by shaded corner). If the edge is wired, cut the lap back as shown by the dotted line. Other corners are the same.

Allowance for wiring: Add twice the diameter of wire to four times the thickness of metal.



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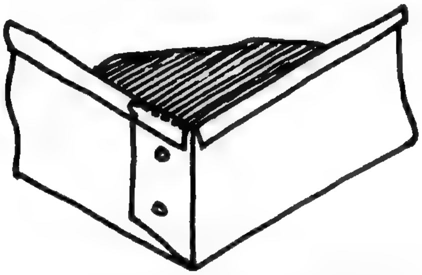
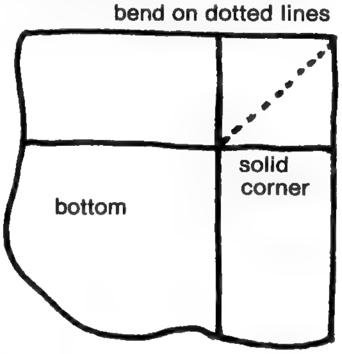


4. A solid or pig's ear corner. The type shown is for square sides (90°) without turnover or wired edge. Hence, the corner needs no notching and is bent on the dotted lines.



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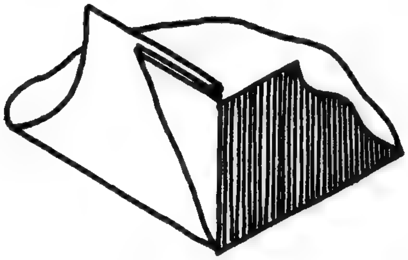


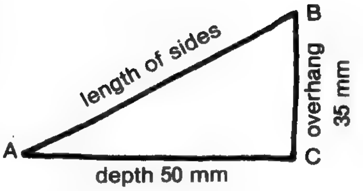
PAN WITH TAPERED SIDES

For a pan which must be liquid tight above the melting point of solder, for example a baking tin, in this case with equal overhang.

Say the pan is 300mm x 230mm at top by 230mm x 160mm at the bottom. Overhang will be

$\frac{300-230}{2} = 35$mm at each end and sides.

Depth is 50mm. To find the length down the slope of the sides, put at right angles the depth (50mm) and the overhang (35mm). The hypotenuse will be the true length down the side.



Note: True length can be calculated, eg

side length $= \sqrt{50^2 + 35^2} = 61$mm approximately.

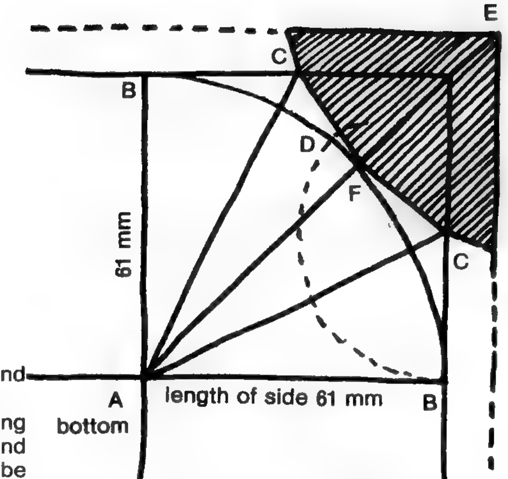
Pattern: Mark size of the bottom of the pan first and add side length AB, equal to AB on triangle (61mm). The overhang is then set along the sides, that is BC is marked off equal to BC on triangle or 35mm as calculated. The points CC are now joined up to A.

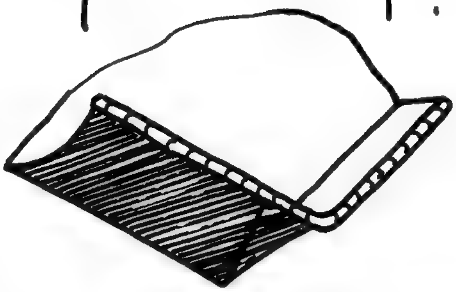
What we call the nett pattern is now complete. If the piece CAC be cut out and the pan bent up, the two cuts AC and AC would coincide. The flap is additional to the nett pattern and the angle that the flap must be to come flush with the end is yet to be determined.

Bisect angle CAC (with equal overhang draw 45° line AE). With centre A and radius AB draw the arc BB. If a line be drawn through point C tangent to BB, point F will be established on line AE. Thus the angle of the flap will be determined.

To accurately draw lines CF, take C as centre with CB as radius and draw an arc BD. Join D to C and point F is firmly established. The allowance for wiring must be added as shown.

To obtain all four corners quickly, cut out the shaded part and use it as a template for the other three corners.





WORK FROM WASTE

Recycling Wastes to Create Employment

Jon Vogler, ITDG/Oxfam, 1981, paperback, 396 pages, illustrated. Price $19.95. Distributed by Second Back Row Press, PO Box 43, Leura, NSW 2781. Add $2.00 if ordering by mail.

In third world countries waste makes good pickings for many poor people who live on or near garbage dumps. Jon Vogler, an engineer, set up Oxfam's "Wastesaver" project to help such people get work from waste instead of being exploited by middle men. It details collection and treatment methods for recycling wastepaper and cardboard, scrap iron and steel, oil drums, copper, lead, aluminium, silver from photographic film, oil, plastics, glass, textiles (rags), rubber (tyres) and human and household wastes.

We feel sure these "appropriate" technology methods will help turn trash into treasure for self-reliant people in the industrial countries, where waste is so plentiful and so environmentally damaging.

Oil drums. The standard 45 gallon (200 litre) oil drum is a most valuable object in any country; it can be used as a container for liquids or solids; as a waste bin; converted into a small (but short-lived) furnace; mounted on a cart or lorry or cut open to make an animal feeding trough. However, as a source of raw material it is even more widely used.

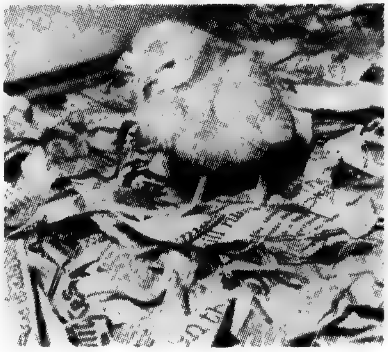
Re-use of oil drums. Drums sell for a higher price if they are clean, painted and free from dents and damage. Dents can be removed by hammering. A piece of railway line makes an anvil. Ensure that caps, tops or taps are not lost or damaged, and try to display your wares.

Some drums might previously have contained toxic (poisonous) chemicals so try finding out where they have come from and, if in any doubt at all, clean thoroughly, in case they may next be used to hold drinking water.

Use of oil drum material. A 45 gallon drum makes a rectangular sheet of steel 180 x 90cm, plus two circular pieces 57cm in diameter. These flat sheets are widely used for cladding shanty houses, or the sides of carts. When cut down they are used to make buckets, dustbins, stoves etc.

Use of paper for animal bedding. Banks, government and other offices often "shred" waste paper into thin strips to prevent "confidential" information from being read. Some experience has been gained in England of using this material for bedding animals and one commercial company, Shredabed Limited, markets both the material and machinery for making it. They claim that:

- Pigs bedded on this material keep cleaner.
- Poultry gain a little more weight and suffer less mortality than birds bedded on woodshavings, straw or sand.
- Other livestock suffer less from respiratory (breathing) problems when bedded on paper instead of straw.
- Shredded paper is much easier to "muck out" from pens and stables after use. It spreads easily on fields and breaks down to form excellent manure.

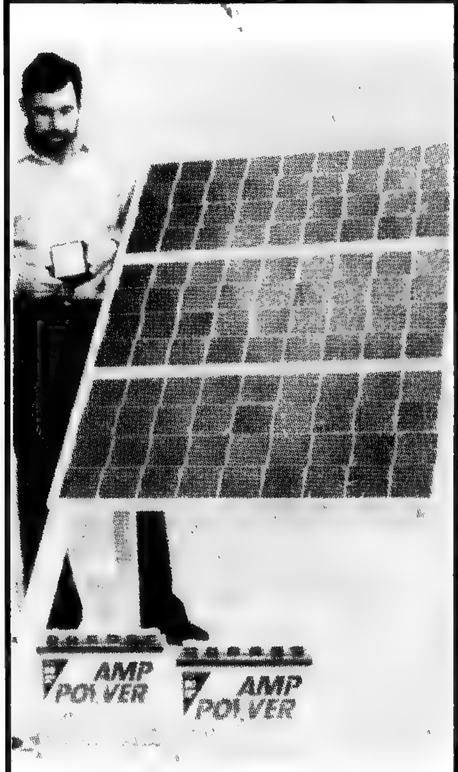


How to make a folding machine for sheet metal work

Rob Hitchings, Intermediate Technology Publications Ltd, London, 1981, paperback, 31 pages, illustrated. Price $5.95. Distributed by Second Back Row Press, PO Box 43, Leura, NSW 2781. Add 60 cents for postage.

Step-by-step instructions on building a machine to fold sheet metal to produce pans, trays, ducting and steel boxes. Technology is at workshop or blacksmith level. Clear, detailed illustrations.

energy access



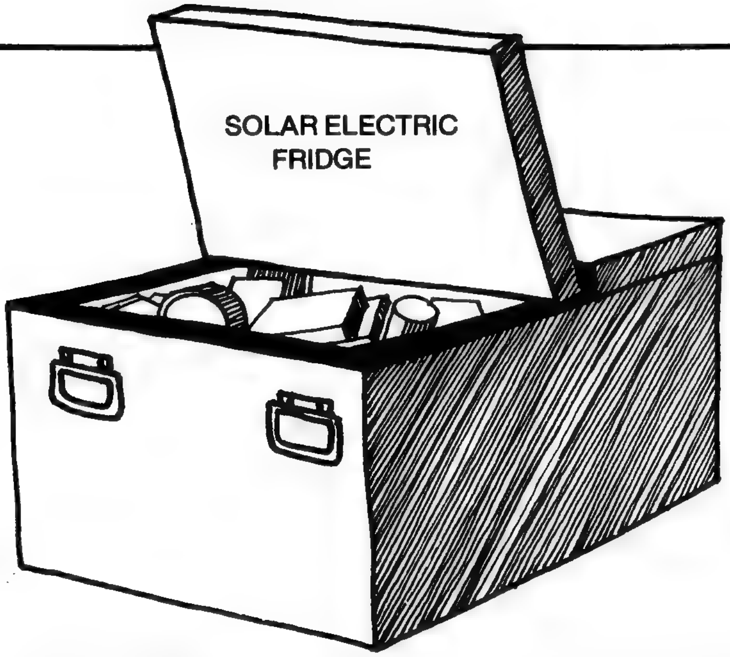
SOLAR ELECTRIC SYSTEMS

From Amtex Electronics, 36 Lisbon Street, Fairfield, NSW 2165. Send SAE for information (new address).

- Solar lighting kit
- Home power system (DC)
- Small AC power system
- Medium AC power system

These kits range from one solar module (40 watt peak power) of 12 volt DC power for lighting through to 16 modules (640 watt peak power) with 24 volt storage and inverter for AC appliances like washing machines and kitchen blenders.

They all use Kyocera solar modules made in Japan from square polycrystalline photovoltaic cells and come complete with battery storage, cable and, where applicable, inverter, battery charge controller and aluminium supports for modules. Each system may be expanded for future demand.



• Around $865.00, from Quirk's, 16 Court Road, Double Bay, NSW 2028. Phone (02) 327 6630.

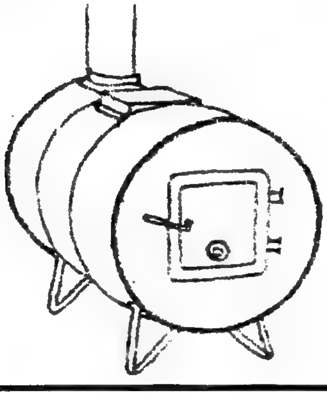
The Porta-Kool Freeze uses 12 or 24 volt DC electricity drawn from a battery charged by 2-3 solar cell modules or a wind generator to run its compressor. In tests it has been drawing 20 amps over 24 hours. Sturdy galvanised casing, 6 cu ft or 3.75 cu ft, it runs quietly when travelling or stationary.

Longlife LMW wind turbines

• 600 watt twin blade model, $2,500, 1 kilowatt, three blade model, $3,500. Send SAE for details to Antelope Engineering, PO Box 271, Milsons Point, NSW 2061.

The LMW 1 kW wind turbine, from Holland uses a 3-phase magnet brushless generator and delivers 12 and 24 volt DC electricity. The reinforced fibreglass blades cut in at 14.4 km/hour (8 knots).

David Hughes of Antelope Engineering with the 1 kW Longlife LMW wind turbine at the Small Farms Field Days, Mudgee, NSW.



DRUM HEATER KIT

• $79.00, plus postage, or send SAE for details.

From Hot Drum, Dept E, PO Box 3, Maleny, Qld 4552.

Recycle a 44 gallon drum into a wood burning heater with this kit which includes door, flue collar and legs with full instructions for assembly. No welding required.

A cooking plate top and water heating coil are available as extras.

access

BOOKS BY MAIL

The Book Connection

PO Box 1463, Dubbo, NSW 2830.

The new booklist for July/August, 1984 contains a wide range of books on subjects which include craft, lifestyle, food, health, farm and garden and music, plus bookplates and 'talking book' tapes. Booklist — **free.**

Aquarian Book Distributors

82 Sussex Street, Sydney, NSW 2000.

From Aloe Vera to Zen, this 28 page Winter, 1984 catalogue covers hundreds of Aquarian and New Age titles on astrology, health, cookery, numerology, palmistry, tarot, tai chi, hypnotism, therapy, ecology, self-sufficiency, meditation and yoga. Catalogue — **free.**

Recycling Resource Catalogue

Friends of the Earth Bookshop, 366 Smith Street, Collingwood, Victoria 3066.

This 6 page list of books and audio-visuals on recycling includes Jobs from Recycling, Waste Paper Recovery (OECD report), Materials Recycling (Worldwatch Paper) and Waste Recycling in Brunswick, by Ian Pausacker (FOE). Booklist — **send large stamped and addressed envelope.**

FAMILY HEALTH

Two separate seminars are to be conducted by naturopath Kenneth Jaffrey and Sister Joyce Lubke for naturopathic students and parents (and parents-to-be). They will be at YWCA, 5-11 Wentworth Avenue (near Hyde Park), Sydney on October 20 and CWA room, Baby Health Centre, Tindale Street (Cnr Castlereagh Street), Penrith on October 21.

Both seminars run from 9.30 am to 5 pm and include vegetarian lunch. Fee $25.00 single per day. To book send $5.00 deposit for each seminar to PO Box 2, Bringelly, NSW 2171. Phone (047) 74 8146.

PHOENIX SEEDS

1984/85 Catalogue

- $1.00 posted from Phoenix Seeds, PO Box 9, Stanley, Tasmania 7331.

In time to plan your spring garden, a range of non-hybrid vegetable, herb and tree seeds, including many hard-to-get varieties, at $1.15 per packet.

For example: amaranth, American ginseng, collards, lablab bean, luffa, edible lupin, Tahitian squash, Shingiku (edible chrysanthemum), carob, Canary date palm, Mexican chia, Chinese date (jujube) and tree tomatoes.

Growing without Schools

A national conference on home education, sponsored by the Alternative Education Resource Group (AERG) will be held at Burwood Community Education Centre, Burwood Highway, Melbourne on September 28, 29 and 30, 1984. For further information, contact AERG at (03) 818 7671 or 82 7766.

AERG is an Australia-wide organisation, based in Melbourne, which aims to provide information and support to people exploring alternatives in children's education including home education by parents. Newsletter, **Other Ways**, is $10.00 annually from 58 Park Street, Hawthorn, Victoria 3122.

ANIMAL FRIENDS

- Quarterly, 12 pages, illustrated, $5.00 annually ($9.00 for two years), from Broomtail Publications, 37 High Street, Eaglehawk, Victoria 3556.

IF you like animals — donkeys, cats, dogs, budgies, magpies or possums — this little magazine about them will warm your heart. It's edited by Ann Walker, author of **Talk with the Animals** (Nelson) and **Donkeys, Ponies and Mules** (Broomtail).

Small Farms Network

- Annual membership $15.00 (students $10.00), from Dianne Storer, The Secretary, Small Farms Network of NSW, PO Box 201, Cessnock, NSW 2325.

The Small Farms Network aims to facilitate the exchange of ideas and information among people interested in small farms and rural or urban self-sufficiency and to represent its members in forming agricultural policy. Workshops, farm visits, field days and seminars are planned. Quarterly newsletter, **the good life.**

Australian Small Farms Directory

Organic groups, Breeders' Societies, special interest bodies . . . any non-profit organisations offering services to small scale farmers are invited to submit information for a free listing in **The Australian Small Farms Directory** second edition (1985).

Send information to Mark Pearson at Harvest Publishing, 8 Beattie Street, Balmain, NSW 2041, or phone (02) 810 0161.

Two and two halves to anywhere

By Liz Lewis

"You're not taking the children?"

How many people said that? And yes, we did — every time! We took Susan at 12 months to Singapore and Malaysia for seven weeks; Susan aged 6 and Peter aged 3 to Singapore, Malaysia and Thailand for seven weeks; Susan aged 7 to England for four weeks and India for four weeks.

"But why not?" It had not occurred to us to leave them at home.

"They'll catch something."

"They'll be kidnapped."

"They won't like the food."

As it turned out they didn't catch anything, get kidnapped or dislike the food. So in writing this, I hope to allay the fears of all would-be shoestring travellers who would love to take your children with you.

I suppose it's only fair to confess that we had done low-budget travelling before in Europe, North America and Central and South East Asia and were prepared for Asian style "squat pot" toilets, bucket baths, food sold from *Mukan* carts, plumbing problems, *kamikaze* drivers and the polite curiosity of the local millions.

Before we left

As well as the usual preparations, health documents, inoculations and currency arrangements, we also have each child on their own passport, which means that they can travel with either parent, or another adult if necessary.

We borrowed lots of books from the library which showed the children pictures of the places they were going and told them something of that country's customs. I also recommend the *Lonely Planet* travel guide books (see *Earth Garden 42)* as being required reading. We wrote to the various tourist boards for colourful brochures of each country. We learnt a few words in Malay and Hindi, which were later to be very useful.

What we took along

The thing I hate most about travelling is coping with luggage, so each person went by the rule "If you can carry it, you can take it." Lew and I each took an overnight bag, lockable, with big outside pockets and waterproof. Susan and Pete each took "backpack" style school bags.

When Susan was a toddler we took disposable nappies on the trip. As she was breast fed, food was no problem, we just supplemented with "safe" foods as she wanted them.

This list is standard for any trip we took to "warm" countries:

Cotton clothes: T-shirts, skirts, shorts, underwear, bathers, what they were wearing, plus two extra of each item, except bathers and shoes (they took their Clark's school sandals). On the trip to England we added a lightweight woollen jumper each.

Tabard insect repellent, Stingos, band aids, panadeine, vegemite, anti-malarial tablets (weekly dose type) suitable for the area to be visited.

Toilet kit, sun blockout, small sewing kit, guide book, small notebook and pen, small toys such as Lego, felt pens, colouring books and a diary for each child to keep. We took body belts for their travel documents.

In the air

On overseas flights we asked for bulkhead seats. Qantas has a crib which slides out of the wall like a drawer, much better than the collapsible arrangements that the other airlines have. The four centre seats also suit us better than being crammed up next to a window.

The airlines provide disposable nappies and baby food. Qantas again has very kindly cabin crew who are good with all the children on board. I found Air India rather vague about children, but Singapore Airlines, although they didn't volunteer help as Qantas does, were good with getting extra food and drinks for the kids as well as finding them children's books. British Airways had a special store of paperbacks available as well as a cabin crew who could speak four different languages. Their hotel directories could be borrowed for last minute accommodation problems.

Susan and Peter in a trishaw at Chiang Mai, Thailand.

The longest flight was the Sydney-London flight with Susan. Being by this time a confirmed jet-setter, she settled down to listen to the headset music and announced when it was time for our hourly walk around the cabin (to disperse the body fluids which begin to accumulate in the tissues). She did crossword puzzles, coloured-in, watched the movie, called the cabin crew for drinks and then curled up in her seat and slept for nine hours between Singapore and Dubai. Her one complaint was that she didn't have time to finish listening to a story on the headset, but she caught up with that on the way home!

On arrival

We always try to get off the aircraft as soon as possible, trying to be ready at the door before it's even open (not a popular move with the cabin crew). Going through the arrival formalities is when you really feel the benefit of having no luggage. Being first through immigration, then having no luggage to collect at the carousel means there is no waiting at Customs and you have a much better chance of getting a taxi or bus into town. That's wonderful with tired children.

Staying there

Cheap, clean hotels. Once you get used to the concrete floors, bathrooms down the passage and hard Asian beds, the rest is downhill and great fun. Usually Asian hotel staff are interested in Western children and often like to play with them. They are also pleased to help you find good, cheap, clean restaurants, bus stops, "honest" money-changers and to explain what is worth seeing, eating or missing. If you have your *Lonely Planet* guide book, you can't go far wrong.

We never book ahead for hotels, just take "pot luck" and we often take the very good advice of taxi drivers.

This was a typical deal we had in 1982: A large hotel in Mangalore, South India, a room with concrete floor, ensuite western toilet and shower, air conditioner, radio, telephone and linen changed daily. The price, for two adults and a child was $A7.00 the lot, daily. Meals, at a good Chinese restaurant, were less than $A3.00 for all of us with breakfast, Indian style, at $A1.20 for three. It would have been possible to go cheaper, but why bother?

The children loved the Asian way of bathing and they didn't fall into the squat toilets, either.

Travelling around

Local transport wherever possible is our rule. The interesting people we meet on buses and trains is well worth the sometimes primitive methods of transport. We have ridden in the backs of trucks, on the Penang ferries, in motorised trishaws in India, pedal trishaws in Malaysia and Thailand, in buses with no window glass; shared the seats with a large bag of chooks, held other people's children and in commuter trains, jammed in like hand bananas, in Bombay.

We try to buy a bus schedule in each place and always feel pleased to decode it. Susan and Pete have always been given seats, no matter how crowded the bus or train. Pete has always travelled free and Susan half price, if she is charged at all.

On longer trips we do spoil ourselves, for the comfort and room in first class makes a one or two day trip so much more enjoyable. The Penang-Bangkok leg was spent in cool luxury in a private cabin. It was also worth going first on the Coimbatore-Bombay 36 hour run, where Susan was very popular with the other passengers, sharing her comics, scrabble and playing cards. The other travellers shared conversation and fruit with us.

"They won't remember it"

Some of the things that the children have fond memories of:

Singapore — The moving footpath at Changi Airport — "It's funny to run on." Sentosa Island swimming lagoon, aquarium and giant turtles, the ferry trip over, friends they made playing on the beach. The zoo with the performing seals, orang-utan and children's zoo. The Science Centre, "the best thing" (we had to go back for a second visit). The torture chamber at Tiger Balm Gardens (two visits). The Tanglin Centre cultural show, especially the Lion Dance. The availability of fresh fruit in every street, lychees, rambutan, longyan, pineapple (yum!). Magnolia Su-su (bottled flavoured milk).

Kuala Lumpur — The zoo.

Penang — The staff of the New Asia Hotel, just like "family". Swimming at Batu Ferringhi. Trishaw rides. The Snake Temple (yuk!). Kek Lok See Temple turtle pond. Char Kway Teow, fried noodles with prawns and clams. "No chilli for us, Mum."

Bangkok — Kai Thom (hard boiled eggs) at the Sri Krung Restaurant. The mirror-tiled Royal Palace Complex, "Aren't the priests pretty?" Long tailed boat trip up the Chaophraya River, nice and cool. The huge sleeping Buddha with "lovely shiny feet". Ladies finger bananas.

Chiang Mai — Feeding bananas to the elephants at the logging camp. The children at the Umbrella Village. The endless steps up the Doi Sutep Temple with the long Naga going up the sides. Dinner and the Cultural Show, where the children were invited to play the cymbals with the band.

Susan and friend at the Royal Palace in Bangkok.

Bombay — The Tiffin Room at the Taj Mahal Hotel, where we "smuggled" in the unwelcome tribal boys (yummy cream cakes). Crawford Market, "It smells so good."

Mangalore — Swimming in the Arabian Sea, with the beach all to ourselves. Celebrating the Ganesha Festival — "Ganesha is my favourite God, Mum."

Indian Village — All the children to play with, bathing in the river. Helping the house-boy cook chapati (see *A Gujarati village,* by Liz Lewis in *Earth Garden 38).*

England — Whipsnade Zoo, "They have kangaroos!" Walking on the rocky coastline at Whitley Bay. Peakirk Bird Park. Walking in the woods. We didn't go to London owing to the bomb incident in Hyde Park when men and horses were killed and injured.

What they hated

— *Durian!*

Precautions

The old one. *Don't* drink the water, don't even clean your teeth in it. Regard it as poison, which it is. Don't put ice in your drinks.

Don't eat reheated pre-cooked food. It is often teeming with bacteria, especially salmonella.

Avoid dehydration. Drink lots, especially if there is diarrhoea. Remember where you saw the last loo.

Use "baby washcloths" or equivalent before eating to clean your hands (these are disposable antiseptic-impregnated tissues).

Only eat fruit which you have washed or peeled.

Avoid eating meat in India.

Eat some yoghurt (curds) each day to enhance the protective bacteria in the bowel.

Teach the children the name and address of each hotel you stay at.

Dress as smartly as possible. In Asia even the poorest people take pride in being dressed well and cannot understand why people rich enough to travel dress in a sloppy manner. They tend to sneer at this practice.

If you don't like chilli, tell the waiter you don't want it. They will always leave it out if you ask.

After each trip abroad our kids have come home tanned, slim, fit, having been thoroughly indulged by the locals. They keep their diaries, bursting with old bus tickets, postcards and brochures, which have been got out many times since and are wonderful reminders of their trips.

Except for mosquito bites and a little dietary diarrhoea, they were quite well. Now they are both looking forward to "taking" Grandma and Grandpa to New Zealand this December, to show them their favourite seats on the Jumbo, how to work the seat controls and generally show off what good travellers they are.

So, shoestring travellers, take heart and give your children a trip to remember. Maybe we have been lucky, but I think all that planning did help to make things run smoothly. We took out ample insurance, although we didn't need it and we were prepared to fly out to the nearest adequate hospital if necessary.

We tried not to take unnecessary risks, such as hiring motorcycles, getting sunburnt, eating indiscriminately or going off the beaten track in northern Thailand. We tried to follow local customs wherever possible, something which always endeared the children to the locals, such as Pete eating curry with his left hand! Smiles and shrugs, no problem as he was so young.

I would suggest, however, that if you haven't been "out" before, that you start somewhere geared up for tourists such as Singapore, which has all the flavour of Asia but provides facilities and cleanliness that we're used to. Then move on to more remote places from there. I've heard many people report their amazement at landing in Bombay or Calcutta "cold" and being quite shocked at what they experienced. It's better to go into it gently.

Good luck and Bon voyage!

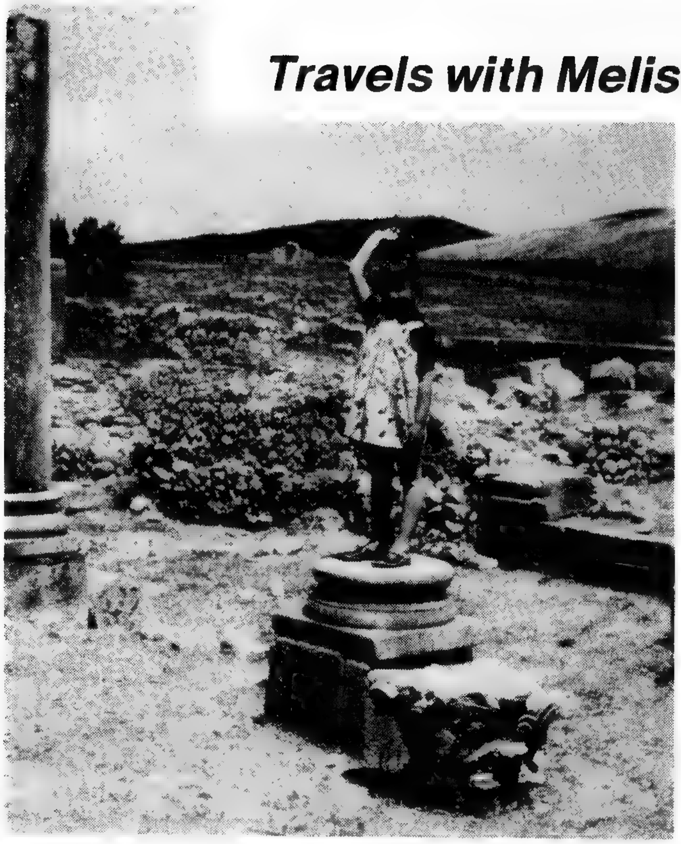
CHINA TOUR

Ron Edwards' **Self-sufficiency tour of China** is now scheduled for April, 1985.

The plan is to go to Kunming, then west towards the Burmese border and the hill tribes around Dali, to Chengdu and west to the edge of the Tibetan plateau and the Wolong Panda Reserve, to Xian and Lanzhou, then west out into the desert to Lake Qinghai, where both Tibetan and Mongolian herdsmen are found.

Price will be something over $3,000 inclusive from Sydney and will also include Beijing, the Great Wall and Hong Kong. For details, send SAE to Ron Edwards, Box 274, Kuranda, Qld 4871. Phone (070) 93 7474.

Travels with Melissa



Another statue! Melissa at Volubilis, Morocco, 1979.

Our daughter Melissa was only 4½ years old when we travelled by campervan in Europe and Morocco in 1979 (see *Touring by van* and *The Kasbah Trail* in *Earth Garden 26).* After a couple of days she had accepted our big, old Commer van as home and enjoyed playing with the jigsaw puzzles, books and games which came as part of its gear.

Most nights were spent in camping grounds where Melissa played, laughed and made friends with other children from many countries, though she could not speak their languages (something we can learn from children). Melissa turned her bed at the top of the cabin into a "cubby" and kept her two favourite dolls hanging near her seat in their own string bags.

The only real adjustment she had to make on the trip was to start taking showers instead of her usual bath.

She took a keen interest in everything we saw, the art galleries, museums, cathedrals, mosques, the countryside and the markets and she asked *lots* of questions. She especially loved to watch craftspeople at work, particularly the young potter in Safi (Morocco) who picked her up, sat her at the corner of his wheel frame, invited her to help with the pots and made some fancy shapes to show off to her.

Melissa's fifth birthday was spent at a deserted white sand beach not far from Corinth and celebrated two days later, when Nanna had joined us under the shady trees at Dafni, near Athens. We gave her lots of small presents picked up along the way as we travelled. She loved them.

Of course friends, books and "experts" all claimed that children under six years of age won't remember their travels. But it isn't true. Melissa remembers many of the places and events and shared family experiences and quite often details which we ourselves have almost forgotten.

By the end of the journey Melissa was quite a mature five-year-old, so much so that she decided to fly home by herself from London to Sydney (looked after by British Airways' hostesses) while we went to New York because "they don't speak nicely in America."

We were reunited at home three weeks later, with plenty of happy memories and lots to talk about before Melissa started school.

Travellers Rest

North by horse truck (part 3)

By Penelope Lea

July, 1983 — "It's not normally so wet this time of year" was a phrase we got rather tired of hearing as we entered the last month of our trip. We left the eternal "buckets" of Grafton and travelled down through reliably sodden Bellingen to the Nambucca Valley, which we always seem to strike in golden sunshine (a favourable impression that was to have a lasting effect).

Packing and unpacking took a bit longer as our trip progressed due to the little odds and ends we'd picked up along the way. Among these were a tidy assortment of sawn rainforest timbers from Nimbin which had to be carefully stacked up off the ground under the truck at every stop and then heaved back up when we moved on.

More of our time was spent in real estate offices where we got the distinct feeling of being shunted on "down the line". Starting from Nimbin we had been hearing "Oh, you won't find what you want around here for that money, better try down around Grafton ... Bellingen ... Dorrigo ... Macksville ... Kempsey." Nimbin and Bellingen areas are certainly in heavy demand and very expensive. Co-operative land purchase is the only viable alternative for most people now and is a sensible and workable solution.

Mandarins were added to our diet in July, from the laden trees in every paddock and along the roads. We collected and ate bucketsful. Kate, who was pleased to be able to manage them all by herself, averaged seven a day. Bean sprouts are another valuable cheap food source for travellers. We relished them with tahini and avocados on yummy Nimbin or Dorrigo bread.

We now did our reading and writing mostly by kerosene lantern as the gas lantern was more expensive to run. Our evenings were very peaceful. With the kids asleep in their "bedroom", we sat up, with books and music for company, sometimes as late as 8.30 pm! We found that the lantern light was a bit tiring on the eyes. Sojourns with friends were a different matter, when the campfire, the stars and the yarns made us reluctant to turn in.

In Kempsey we added the last word in luxury to our little mobile home. At an auction we picked up a kero heater for only $16. We could now sit up for longer at night and it was cosy enough to bath the kids in the truck if it was cold and rainy outside.

The chainsaw continued to be useful as Dave cut many more loads of firewood for ourselves and friends. He regretted not bringing the fence strainers which had only been left behind after I'd snorted about taking them on holidays.

A constant interest on the trip, apart from the houses people were building, was the improvisation and ingenuity being used in lighting, heating and supplying water. There were bucket showers, car battery light systems and a stove made from mud and an old truck door. We saw a great assortment of country dunnies, each with its own wonderful view.

Despite the damp we seemed to keep returning to Bellingen. Its attractions (apart from blissful scenery) included excellent lunches for $1.00 at the CYSS Centre and a lift on the school bus where the kids compete with the cassette players to make the most noise. The benefit Cabaret for the local Rudolf Steiner school was a great social occasion. With everyone in their colourful best (including us, thanks to the Channon and Bellingen markets), great local music, mountains of home-made tucker and kids dancing till they dropped in corners, it didn't seem too different from the traditional entertainments of the Old Settlers (though it was slightly more electrified).

Pen's camp oven bread rolls at Mungay Creek, NSW.

Friends took us up the Dorrigo Escarpment into a strand of rare Antarctic Beech rainforest near Ebor on land they shared. Only the call of the lyrebirds disturbed the stillness and silence under these ancient trees with their long lichen beards and the decaying fallen trees and giant tree ferns around them.

At the end of July we had to turn south again. We descended rapidly, suffering severe culture shock as we reached Sydney. Previously it seemed to us to be tropical and exotically fascinating, but it now appeared cold, regimented and full of roads and people.

The truck seemed to take up half the suburban street and all the neighbours stared at us. We didn't feel comfortable again until we reached the South Coast and made our last camp in the Araluen Valley among the so-familiar jumble of half-built houses, dubious roads and wonderful improvisations.

Tailpiece — Two weeks later we were back up north again, a flying visit by car this time, to look at some land with friends. We found our particular piece of paradise near Taylors Arm — 100 acres of mixed hardwood, rainforest and good grazing; lots of rain and birds we've never seen before.

So exactly a year after our first trip we're making a final one, this time loaded up with the horses, cows, bees, sheep, chooks and a heap of housebuilding ideas!

The first two parts of *North by horse truck* were in *Earth Garden* 41 and 42.

Trees of friendship

Dear Keith and Irene,

The Herb Society of Victoria recently sponsored a *Herb and Historical China Tour,* visiting 16 cities, Mt Lushan and the Yangtse River over five weeks commencing last April 1.

During our visit to Chonqqing (Chungking) I asked to see the banyan trees that you planted in 1982 (see *Trees of Friendship* in our China issue, *Earth Garden 34),* thinking that we could just slip in and see them. However, quite spontaneously, we were received officially, complete with a cup of tea and briefing by the director of the Academy of Fine Arts, then shown the trees and conducted around the gallery.

Those superb paintings by the students really are breathtaking. We spent a very pleasant morning as you did. We also asked to see the Bronze Chimes (circa 2000 BC) and we were able to buy tapes of the music.

Our visit to Mt Lushan was the highlight of our trip — imagine azaleas, magnolias, witch hazel, cherries, plums, pears and violets (and many more) growing wild over the mountains and you will appreciate that we nearly went crazy trying to assimilate all the knowledge "growing" there.

We officially presented three copies of *The Royal Botanical Gardens of Melbourne* to the Botanical Gardens at Guangzhou (Canton), Mt Lushan and Hong Kong and distributed other books about Victoria to local guides.

All the way through China we were treated like royalty, with an excellent national guide, first-class accommodation, including our berths on *The East is Red No 46* on the Changjiang (Yangtse) River — no steel bunks for these pampered "herbies"! I have been to China three times and each visit has been a wonderful, learning experience, with so much to learn from such wonderful people.

Regards, Marjorie Hutchinson (tour leader), Cheltenham, Victoria.

Dear Marjorie,

We were thrilled to hear about the banyans we helped to plant in Chonqqing and to see from your photo how well they are looking two years later. Thanks so much for your letter and this good news. We're pleased to pass on details of other China trips offered by The Herb Society of Victoria in 1985 to our readers. — ***Irene and Keith.***

CHINA TOURS — 1985

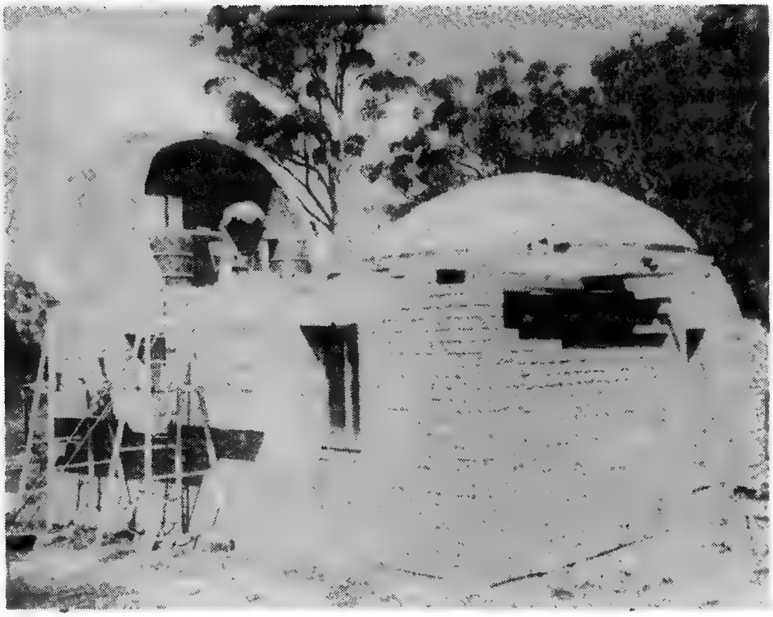
The Herb Society of Victoria is offering members a choice of two China tours in 1985. Detailed itineraries and costs are available from Marjorie Hutchinson, Herb Society of Victoria, Box 239, St Kilda West, Victoria 3182.

Tour 1: Chinese Gardens Study Tour

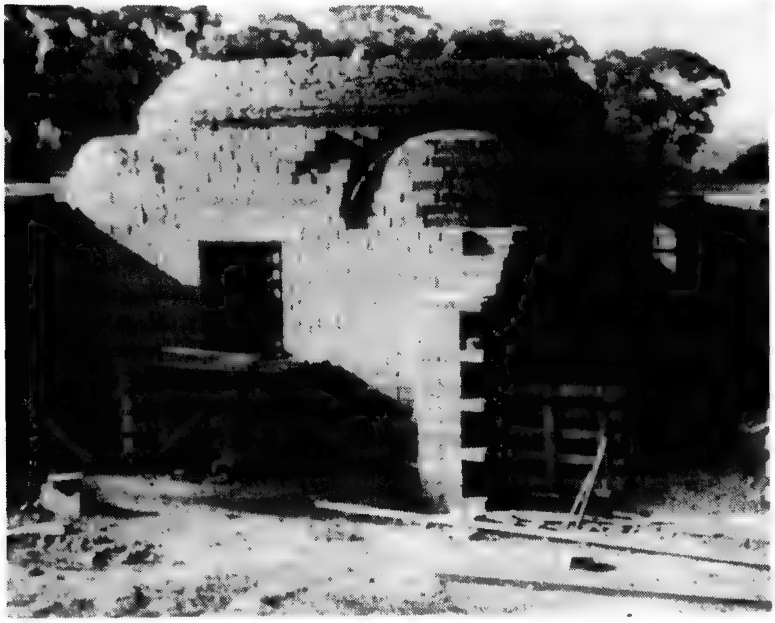
Departing early April, visiting Hangzhou, Shanghai, Suzchow, Wuxi, Nanjing, Yellow Mountain, Beijing, Quiliu and Canton. This tour visits the Grand Canal, the traditional gardens of the East Coast and the Yellow Mountain in Spring. Tour leader — Guy Smith, Deep Creek Herb Nursery, Mitcham, Victoria.

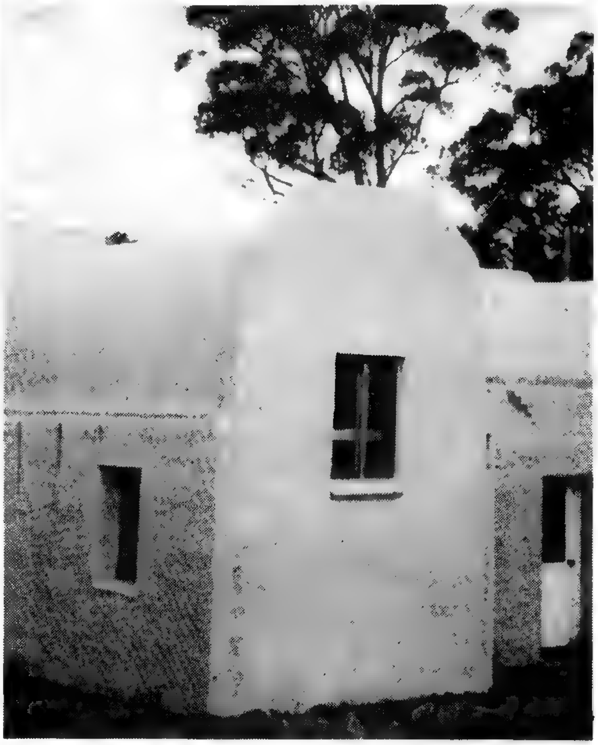
Tour 2: Silk Road Horticulture and History Tour

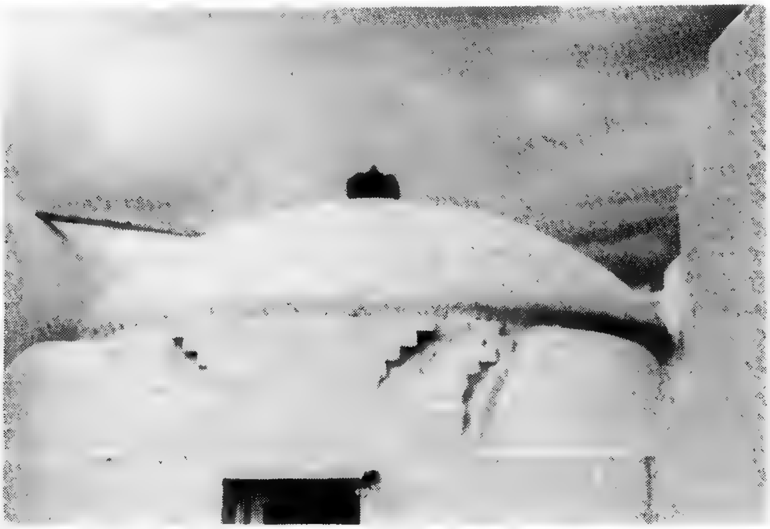
Departing early May, visiting Canton, Xian, Lauzchou, Dunhuang, Turfan, Urumchi and Beijing. This tour follows Marco Polo's route along the Silk Road across the south west corner of the Gobi Desert to the grasslands of North West China. Tour leader — Marjorie Hutchinson, Technical Adviser, Herb Society of Victoria.



THE PINK PALACE







Stages in building the flowing earth forms of barrel vaults and the dome of the Pink Palace at Ruth Cilento's Sun Powered Eukey Complex, Queensland.

- Details on the following pages.

By Ruth Cilento

Our latest building at the Eukey Complex, with its barrel vaults and mudbrick dome, is now called **The Pink Palace.**

After putting on two coats of waterproof whitewash (see recipe) as a final render it was so dazzling white that it really looked out of keeping with its surroundings.

So I picked up some red dirt from Maryvale and Oakey from beside the road. In the final coat we added this to the lime, salt and fat so that the **domecile** is now definitely a soft pink colour.

The northern room, made of glass flagons filled with coloured water, is delightful and looks like a room of jewels. It heats the air for the rest of the building in winter if you open the flaps on the circulation ducts. It's all very simple if you build the flagons into the design as I did.

Cool tube

In summer if you don't want to open the windows for through and cross-ventilation, you can open the **cool tube.** This is an eight inch drainpipe that I put in before we poured the concrete floor slab. Cool air enters the house from the bottom of the fireplace through a space that can be shut off with a damper lid. The pipe runs under the floor and underground sloping away outside into the garden. The original idea was to run it to the well, but that has now been filled in because it was too dangerous for wandering little people.

Fireplace

The fireplace is made of granite rock and is free-standing in the very centre of the domed building. It has doors opening either onto the eating area or the living room. If the doors are almost closed, the wind-driven ventilator that caps the central flue (on top of the dome) pulls cold air right through the house. There is a damper on this flue too, to regulate how much air comes through. Sounds complicated, but it isn't and it works well!

The building is very comfortable to live in. With its 16 inch thick walls the temperature stays constantly between 17°-23°C (63°-70°F) if you want it to.

Hot water

The hot water system has its solar panels arranged like a shade over the kitchen window. The wood stove has a backup system linked into the solar hot water system to use if necessary. So far, I haven't needed it.

I had to buy in soil to make the mudbricks because we don't have enough clay in the Eukey subsoil for mud-and-straw bricks, though it is perfect for **Cinva Ram** pressed blocks. I employed a neighbour to help me make the two different sorts of bricks — or I would still be making them. There were 6,000 pressed earth bricks, 2,000 dome mudbricks and more for the vaults.

The dome bricks are 10in x 10in x 2in, made in a wooden framed mould.

To make the dome I started with the square room and took the walls up to 7ft 6ins height at first, as required by the building inspector. Then the corners of the room were cut off by building arches across them and the corners were filled in with bricks (as shown in the illustration) to make **squinches.**

The straighter areas between the arches are laid up with bricks to the top of the arches, so forming an octagon. This is brought into a circle in two more courses to form the base of the dome.

The building inspector here would not allow me to use mudbricks for the load-bearing parts. I had to use cement bricks. For the squinches, which don't carry any load, I used Cinva Ram pressed earth blocks.

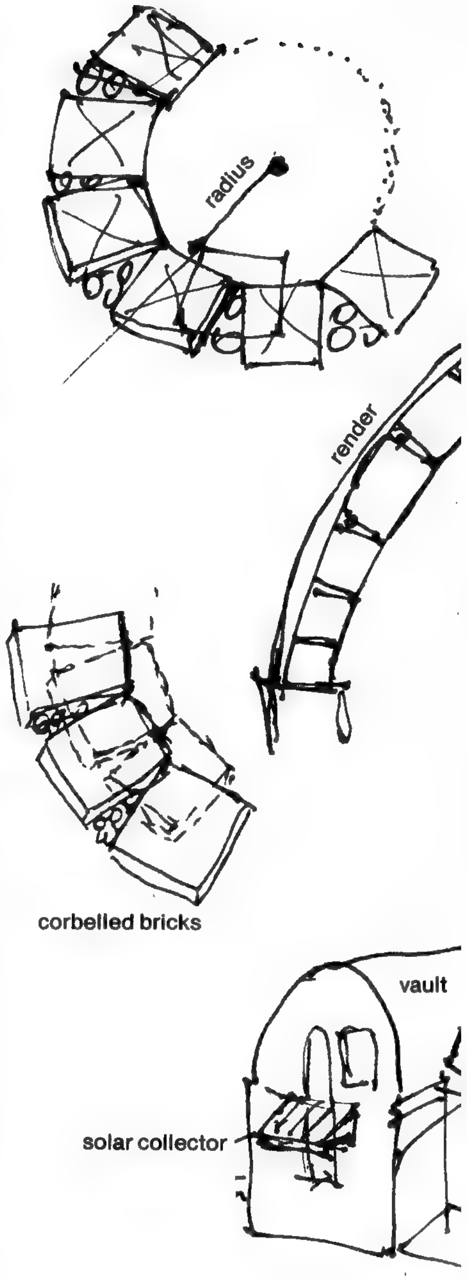
Each course of dry mudbricks is laid in a bed of mud. Each mudbrick touches at the inner edge, but in the space at the outer edge are only little dry rocks, so that the course won't shrink as it dries. When the course is completed, a layer of mud is put on and the next bricks are **corbelled** (that is, overlapped) out, not more than 20 per cent.

I used a radius made from a piece of baling twine with a knot in it attached securely to a pole that was **exactly** in the centre of the original square floor. As you hammer in each brick you measure its distance from the centre. If the bricks were not corbelled, you would end up with a circular tower.

When the dome is finished the roughest parts of the outside must be trimmed off with a tomahawk. Then, as soon as the dome is completely dry, it is covered with a layer of mud plaster. Just how many mudbrick courses you can do in one day really depends on the weather. We never did more than four courses because we were building in winter and the bricks would not dry quickly.

The final render of cement plaster or whitewash should never be put on before the whole roof is properly dry. We had to cover it with tarpaulins most of the time we were building because of rain.

Finally, after patching up rain cracks many times, I put a layer of birdwire over the whole dome and covered it with two inches of cement sand and **Aquapel.**



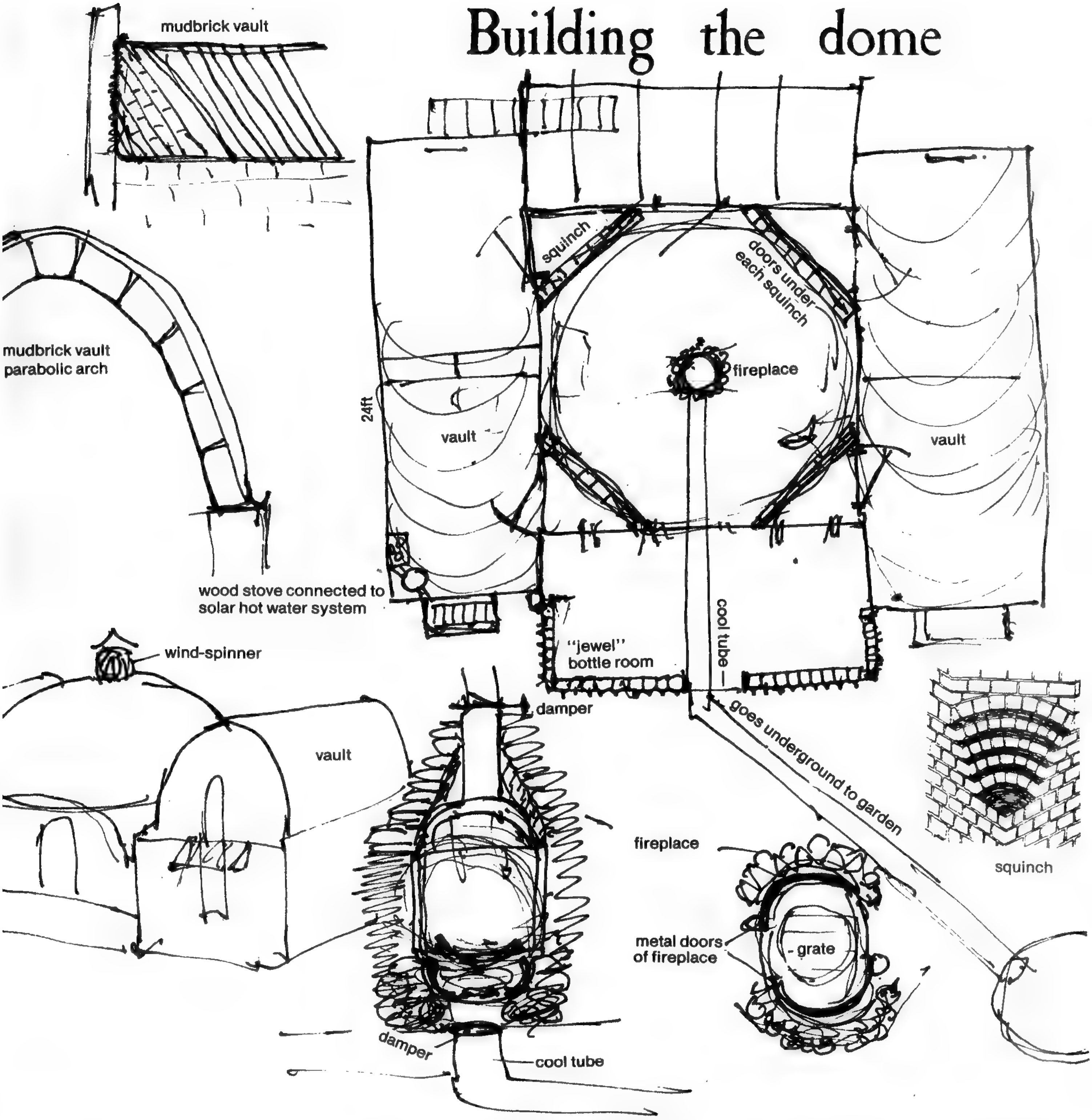
PILGRIM FATHERS WHITEWASH

Dr Ruth Cilento learned how to build mudbrick domes and vaults during a workshop conducted at Maryborough, Victoria, in 1982 by Nepalese architect Ramesh Manandhar. In exchange she contributed the waterproof whitewash recipe (attributed to the Pilgrim Fathers) which was used on the mudbrick domed building constructed during the workshop.

Ingredients:

7lbs fresh rock lime
1lb coarse salt
¾lb clean dripping

Building the dome



Method:

Place all ingredients in an old two gallon bucket. Cover with cold water. The lime makes the mixture bubble and boil. Leave overnight. Stir well and keep adding water as you work.

Comments:

Use gloves when mixing. We have used hydrated lime as successfully as fresh rock lime. Mix the salt with the lime dry. The coarse salt used for water-softening is suitable and can be purchased in bulk.

Heat some water in a large saucepan or kerosene tin. Add the clean (rendered) fat. When the fat has melted, shake in the dry ingredients whilst stirring well. Keep stirring and adding the dry ingredients until a thick creamy consistency is obtained.

This will set on cooling but will not separate into layers. Stir well before applying with a 6-8 inch whitewash brush.

If stirring does not bring the mixture back to a creamy consistency, add more water. This can be added when cold. Two coats of this whitewash are better than one. The first coat looks grey but dries white.

The Eukey Complex

By Ruth Cilento

In 1977 when I started the **Sun Powered Eukey Complex** it was going to be basically an art gallery where I could have my own and other paintings, sculptures and art work.

It is cold in Eukey in winter, down to 9°C sometimes. Most of the local houses are made of timber and designed for summer. Many people leave the district when they become elderly, mainly because they can't stand the winter in these cold houses.

The Sun Spot

Yet there is granite everywhere in building block size just for the gathering. So I studied designs and methods, some gleaned from early editions of **Earth Garden**. The art gallery, called **The Sun Spot**, is solar heated and cooled with a rock bed of one inch basalt gravel under the floor and ducts that take hot air from the northern passively heated room.

The active solar system is worked by 12 volt car fans at the end of each duct, which draws the air through. The lights and fans in The Sun Spot are run by a 32 volt electric system centred on an old reconditioned **Dunlite** wind generator that puts out 750 watts.

Hot Room

Paintings would fade in this Hot Room, so I put my mineral collection out there. Some of the rocks in the display were collected when I was eight years old, making this a sort of lifetime of rock-swapping that finally found a home.

On the other side of the building there is an extensive bookshop with an emphasis on self-reliance and independence, soft technology information, conservation, positive health, gardening, cooking and natural history.

During the three main days of the Apple and Grape Festival, more than 600 people came to the Complex to look at the 56 displays. They are not all concerned with energy sources, of course. There are nine different simple methods of construction in the buildings and lots of little inventions that people have given to the Complex to show their ingenuity.

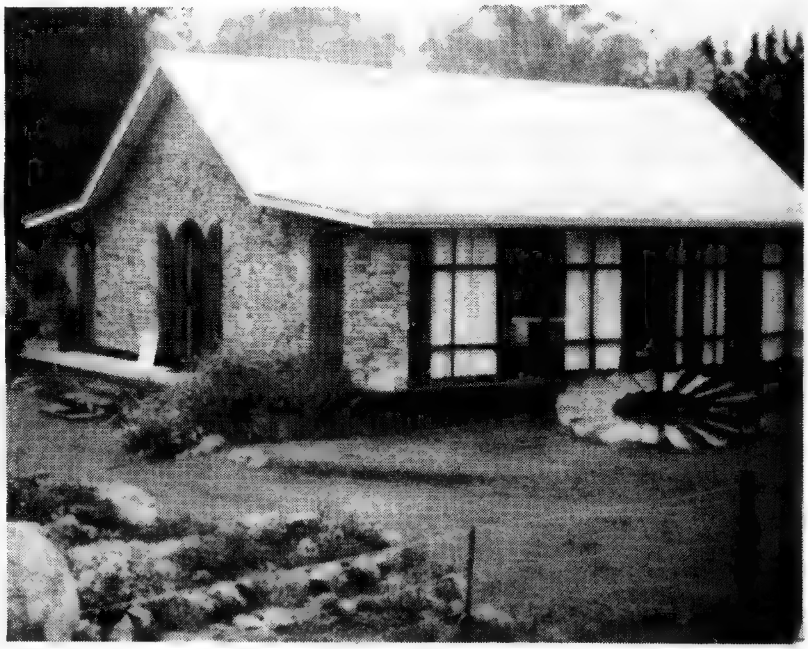
The Tin Miner's Cottage

The Tin Miner's Cottage contains many labour-saving devices from the past that were used by people to make life more comfortable in the pioneering days, when muscle power (elbow grease) was a source of much energy.

I have a diesel generator, 5 KVA, that supplies 240 volts AC power to the house because the 32 volt and 12 volt systems I have in other parts of the Complex just fall short of working all the equipment, such as refrigerator, stereo, toaster and colour TV, that I might want to use.

I am hoping to use sunflower oil for the generator instead of diesel, since this is a renewable fuel. Ken James of Darling Downs Institute in Toowoomba and Des Gallowny of James Cook University have both used this oil very successfully in old **Southern Cross** engines like mine.

I came across so many interesting designs when reading about alternative energy that I decided to make some solar cookers and useful sun-powered things myself. Some of the failed attempts are going to the dump with the rubbish we are slowly clearing up. However, some were successful. Some I bought from France and the United States, so there is now quite a good display of solar cookers, sundials, wax melters, food dryers and so on.



The Sun Spot art gallery at Eukey.

Geodesic dome

To protect them from dust, wind, water and inquisitive — and possibly burnt — hands, they were housed in a glass and metal geodesic dome. This sits like a giant showcase on the 12,000 gallon underground tank that takes water from the roof of The Sun Spot. Water is pumped up into a high tank for pressure in the kitchen and toilet block by a **Southern Cross** windpump.

There are more displays and they all have a similar theme. The purpose of the Sun Powered Eukey Complex is to stimulate the imagination, to demonstrate that anyone who really wants to live a simple, independent, self-reliant and healthy life can do so by using the knowledge so generously imparted by people of goodwill. There is no need to be under the power of the people who make the electricity.

Non-aligned technology

I thought that my solar-powered tricycle (**Earth Garden 28**) with its 12 volt battery charged by a panel of solar voltaic silicon cells was a good example of this. But when I investigated further, I found that the solar cell manufacturing companies, the battery companies and the wind generator companies were owned by the giant petroleum companies. That was a rather sobering thought.

Because of this I scratched around to find some alternative technology that was non-aligned to the multinationals.

Steam engines? Yes, I have two little models, but they are not really a viable alternative today unless you have a way with old machinery.

Stirling cycle engines? Yes, I have three models, but the efficient automobile engine was bought by Henry Ford II in 1965 and will probably not see the light of day commercially.

Compressed air technology is well developed and could be more so. So far it is used for shearing, pruning and pumping. So I had a **Savonius rotor** made that works a little air compressor. It is far from technically perfect, in fact it needs a 30 knot wind to make it work. Yet if I can do that with no technical skills, someone who does have these skills can improve on it.

This machine has tickled the imaginations of many people, from schoolboys to octogenerians. They are all anxious to tell me how they would go about improving it or making a better one!

This is what the Complex is about — helping people to use their creativity, from the old to the new, from the sublime to the ridiculous, there is a place for everything so long as it helps the human race and does not destroy other life.

The Sun Powered Eukey Complex — with its new "pink palace" — is at Storm King Dam Road, Eukey, close to Stanthorpe, Queensland.

EUKEY COMPLEX FOR SALE

Stop press: Ruth Cilento has advised us that The Sun Powered Eukey Complex is for sale. "I'm very reluctant to sell because it is so beautiful and everything is going so well," Ruth says, "but my work is taking me more and more to Brisbane as that is where I need to do the research into nutrition and degenerative disease, including cancer, which takes up so much of my time and money.

"My fervent hope is that someone who has the same ideals and concepts that I have will come forward to love and care for it as I have." Contact Dr Ruth Cilento at 1 Trackson Street, Alderley, Qld 4051, or telephone (07) 352 6634 for details.

Building notes

BUILDING IN EARTH

One day seminars with John Archer will be held at the Victorian College of Agriculture and Horticulture, Swan Street, Burnley (Melbourne) on October 6 and 7, 1984 from 10 am to 4 pm. Fee $14.00. Inquiries (03) 419 3429.

Topics to be covered include design, building regulations, foundations, suitable soils, making and laying mudbricks, rammed earth construction, sealing of walls. Videos and 35mm slides will illustrate the talk.

OWNER BUILDERS ASSOCIATION

Maffra-Avon Owner Builders Association, PO Briagolong, Victoria 3860.

The formation of a Victorian organisation to represent owner builders was discussed at the **Owner-Building and Earth Architecture** national conference in Melbourne (see **Earth Garden 42)**.

Owner builders at Maffra have taken the first step to initiate the organisation, which will allow a more effective voice for owner builders with the government, councils and finance or banks and financiers.

"The most effective way we can see the structure being set up is to firstly put people in contact with other owner builders in their area, having them elect representatives to the State Association and finally to organise a conference for these delegates to determine further details and developments," they say.

If you are interested in joining the Victorian Association, please send your name and address to the group, with SAE.

Earth Architecture in Victoria

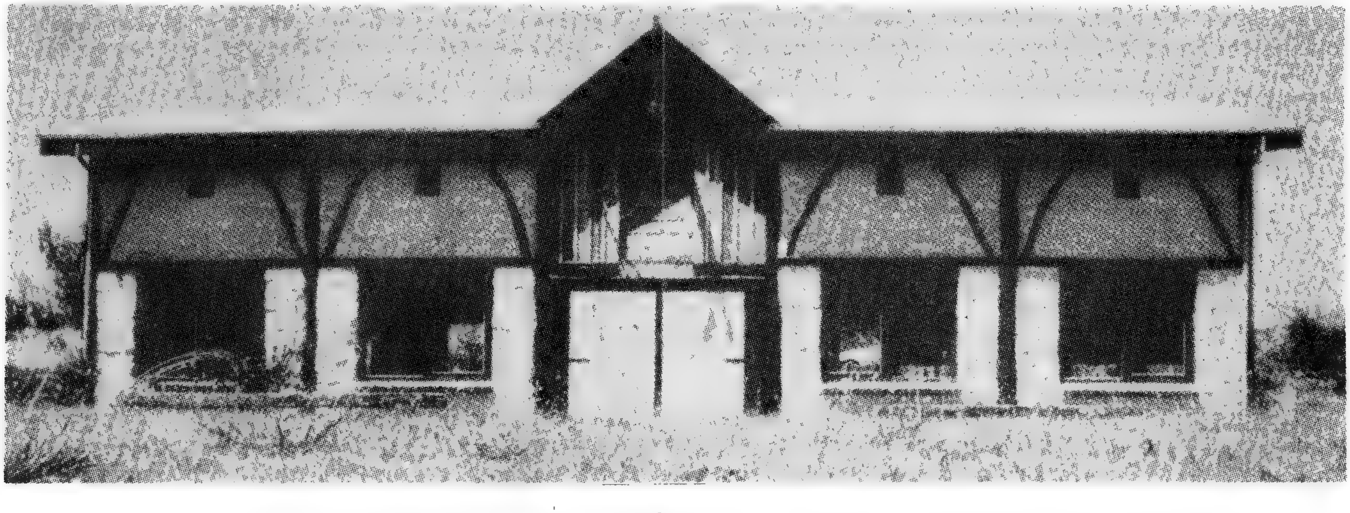
Photographs showing the variety and scope of earth buildings in Victoria prepared by the Ministry of Housing for the Owner Building and Earth Architecture Conference in Melbourne last February will be on show at these places in later 1984:

Royal Melbourne Show, Epsom Road, Flemington, Government Display Centre — September 19-29. Self-builders will also demonstrate building methods.

Footscray Institute of Technology Library, Ballarat Road, Footscray — October 1-15.

Mildura Agricultural Show, Show Grounds, Mildura — October 18-20.

Photo for Ministry of Housing, Victoria, by Max Deliopolous.



IMPERMEABLE RENDERS

Bondcrete and similar chemicals are not usually satisfactory. A good Bondcrete finish looks like a clear plastic lunchwrap on the wall. A poor finish (or the good one a year later) looks like wrinkled lunchwrap — it will have bubbled off in many places.

Latex paint. If you really want a plastic wall, spray on latex paint. Enough water should be added to make the paint about twice as runny as for brushing. The wall should also be thoroughly wetted down. This finish works best with porous surfaces such as rammed earth, because it soaks in and in effect converts the outside ¼ inch of wall into a tough plastic layer. However, I have seen a mudbrick house with a good latex finish that had lasted for years. The coat can be clear, or any colour you like.

Sodium silicate is a liquid you paint or spray on the wall. It soaks well in without changing the appearance of the surface. It is supposed to make the wall impermeable to water. I have seen it used on two houses. In both cases the owners eventually covered up the wall with a whitewash because the sodium silicate did nothing to protect the surface from wear.

Oils. There are a variety of oil treatments you can use. The old, traditional treatment for rammed earth walls was repeated brushing with 50-50: a mixture of raw and boiled linseed oil (you have to guess the proportions). G. F. Middleton recommends this for rammed earth floors as well, with a beeswax finish on top. The only trouble is cost — linseed oil is no longer cheap.

Resins are excellent soil stabilisers. During World War II the RAF used resin stabilised runways on its temporary airfields in tropical areas. Soil and two per cent resin by weight will produce a hard wearing, waterproof mixture with the same colour as the original soil. Both sandy and clay (lateritic) soils were used. The field was ploughed, then tilled until the top four inches were a fine powder. The resin was mixed in, then the whole field was thoroughly compacted by rolling.

I have heard of applications of resin to rendering, but I have never seen an example, or talked to anyone who has used this technique.

Bitumen can be tried if all else fails. A friend once picked up from the roadside several discarded 44 gallon drums of the bitumen emulsion they use in "cold mix" asphalt base. Each drum was empty, except for a few gallons sticking to the sides.

We used this stuff to repair a rammed earth wall that had gone soft and crumbly due to water penetration. The stuff was mixed with water, the wall was thoroughly wetted, then the bitumen mix was brushed on time and again. The result is a tough, strong wall which is waterproof. Unfortunately it is also black, but you can't have everything!

PERMEABLE RENDERS

Clay wiped on is the simplest. A rubbed-in mud coat works on a mudbrick wall if the soil is a heavy clay with a high kaolin content (which doesn't crack on drying). The clay coat has to be renewed regularly.

Stabilised clay. Wallpaper size, alum, rock salt, skim milk and other substances have been mixed with clay in various combinations and wiped onto walls. I have no experience with this type of render. I suspect success depends very much on individual details of soil, mixing and application. The best bet is to experiment on a small scale with different variations.

Cow manure and clay is the traditional treatment for mud-

Rendering earth walls

By Dr Robert Rich

You render an earth wall for much the same reasons that you paint wood or plaster: to protect it and to make it look better.

In addition, most mudbrick and all rammed earth surfaces produce dust. A good inside render saves you from having to breathe and eat bits of your walls. If the natural earth colour is dark, a light coloured render will also increase the amount of available light from windows and lamps, and make rooms look cheerful and bright.

So I recommend that you render inside a house. Whether you need to render outside as well depends on the soil you used and on the local climate. Your wall needs no extra protection if it would pass the Experimental Building Station's "accelerated erosion test" (See **Earth Garden 39**). An outside render will still be a good idea if you experience severe storms (eg, cyclones) or regular sandstorms. And of course there is nothing wrong with a coat put on for purely cosmetic purposes.

There is a generally accepted body of knowledge on building with earth. Rendering seems to be the one topic on which everyone has different preferences. Alistair Knox prefers cement-lime whitewashes. Abbie Heathcote swears by cow manure and clay. Brian Woodward of Earthways rates treatment with an oil as the best. And so on. I suspect that a lot of the variation is due to differences in the soil and building technique. For example, I have had poor results with cow manure and clay on a rammed earth wall (using sandy soil of course). People who have succeeded with this method seem to have used heavy alluvial clay in their mudbricks. Such clay moves with changes in moisture content, so a flexible coat like cow manure and clay should bond better than a hard coat such as whitewash.

Left: Mudsmith Bob Rich demonstrates the art of rendering an earth wall.

All renders have the characteristic of stabilising the wall surface so that water runs down it instead of soaking in (surprised?). They also provide a tough, hard-to-wear skin which is either an extra layer attached to the wall, or is a change in the outside few millimetres of surface. In addition, some renders are completely impermeable to water, while others allow the wall to "breathe", that is, to change its moisture content.

I cannot emphasise too strongly that you should not put an impermeable render on both sides of a wall. It is essential to allow the wall to lose or gain moisture content. The render will bubble off and the wall can crack if the earth is sandwiched between two impermeable layers.

The only exception I know of is a rammed earth house in Western Australia. It has 2ft thick walls, treated with linseed oil inside and out.

There is no need to "protect" the wall from moisture gain, even in wet areas like bathrooms. We have been showering next to a mudbrick wall covered with a cement-lime whitewash for two years (I plan to put on tiles one year) with no ill effects on the wall. Whitewash is one of the finishes that allows moisture through.

Impermeable finishes could be used outside if the local climate is severe. If you use them inside the

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brick walls. In my experience it isn't much good unless the clay is very heavy and sticky (both the clay in the wall and in the render). With relatively coarse soil (say more than 20 per cent sand) the render peels off rapidly and allows too much rain through even if it sticks.

The manure has to be "green" and runny, fresh out of the cow. It is said that dairy cows provide better raw materials — but maybe they are just easier to catch! Recommended proportions of clay and manure seem to vary, so first try 50-50 and vary this as you gain experience.

You make up a sloppy mess in an old bathtub. Let it soak for several days, stirring it at least daily. Then smear it on.

Essential requirements for this are: the old tub, rubber gloves with no splits and a clothes peg (on your nose).

Cement render. If you have sandy soil, you can build up a thin coat of sand-cement mortar on the wall. If you buy sand, **plasterer's sand** is the best and costs no more than concretor's sand.

I have produced a very tough, durable coat using rotted granite (a crushable crystalline soil) with 10 per cent cement content. This is also the stuff I use for grouting cracks and faults in a wall before rendering, so I am describing it in detail in the accompanying article on wall preparation. The only trouble with cement render is that it is relatively fragile, so vibration or a hard knock is likely to crack it off. Still, it is much tougher than the plaster you find in most people's homes.

Cement-lime whitewash. This is my preferred treatment for any earth wall other than one made from highly reactive clay, which swells and shrinks a lot with changes in moisture content. Whitewash simply cracks off a wall like that.

The traditional recipe is two parts of cement to one part of lime (slaked lime or **Limil**), a handful of rock salt dissolved in hot water, the mix sieved through fly wire, then brushed onto the wetted wall.

Three to five coats are usual, the last two using white cement. Pastel colours can be achieved by using muddy water. You can use commercial mortar colouring, but I have never done so. Small batches should be used, with as many people painting at the same time, or the mix goes off.

There are two problems. Like cement render, the coat is relatively fragile and will chip off if hit hard and white cement is nearly three times the cost of ordinary grey cement.

I have experimented with varying the proportions and have come up with an improvement. I mix four parts of lime with one part of grey cement, wet it to the consistency of thin paint and brush it on. The resulting coat is transparent when wet, but dries out opaque.

If it is too grey it can be covered by a coat or two of neat lime (no cement).

Colouring is possible with this recipe too, by mixing in a little mud or mortar colouring. I put on at least three coats. Where extra strength is needed, I first put on a couple of coats of traditional cement-lime wash (with grey cement). My mix produces the same visual effect as the usual whitewash, but resists knocking better and costs a lot less.

The first wall I coated with this mix is in a laundry which is also the most frequently used entrance way. Despite the moist conditions and the passing hordes, the render is undamaged after two years.

Lime and lard is used in many areas of the world where cement is expensive. According to my friend Ramesh Manandhar it is the standard render in Nepal.

One receipe he reports is:

7 litres of unslaked lime
7 litres boiling water
¼kg melted tallow or lard

house, you will lose one of the advantages of living in a well built earth house: ideal humidity of the air. The air is never dry and distressing as it is in many air-conditioned or electrically heated places. Conversely, there is no problem with condensation, mildew or other signs of dampness. I once went from a brick veneer house where the windows were fogged up to a mudbrick house where they were dry, except for a small circle where a kettle was blowing steam on the glass!

I know of at least 15 rendering methods. They share just one thing in common: the wall must be well prepared and as dry as possible before rendering.

A few hints

1. Do not render until the walls have had every chance to dry out thoroughly. Otherwise the render is more than likely to crack off, drying of the wall will slow down and serious cracking can occur.

A mudbrick or cob wall should stay unrendered for one whole summer. If you want to move into the house during this time, you could put a couple of coats of lime wash (no cement) on the inside surfaces. This temporary render will keep down the dust and lighten up the house. Little is lost if it cracks in a few months.

2. Most earth walls need careful preparation before rendering. **See the story opposite.**

3. Most renders require you to wet the wall before application. This improves the bond by slowing down the setting of the render. For the same reason, avoid rendering in hot weather. Cool, damp weather is best.

4. You will never get two batches of render the same colour. Don't worry about this — it is part of the charm of natural materials. Also, most lived-in houses have furniture, pictures, wall hangings and so on which break up big wall surfaces, so variations in wall colour are not usually noticeable.

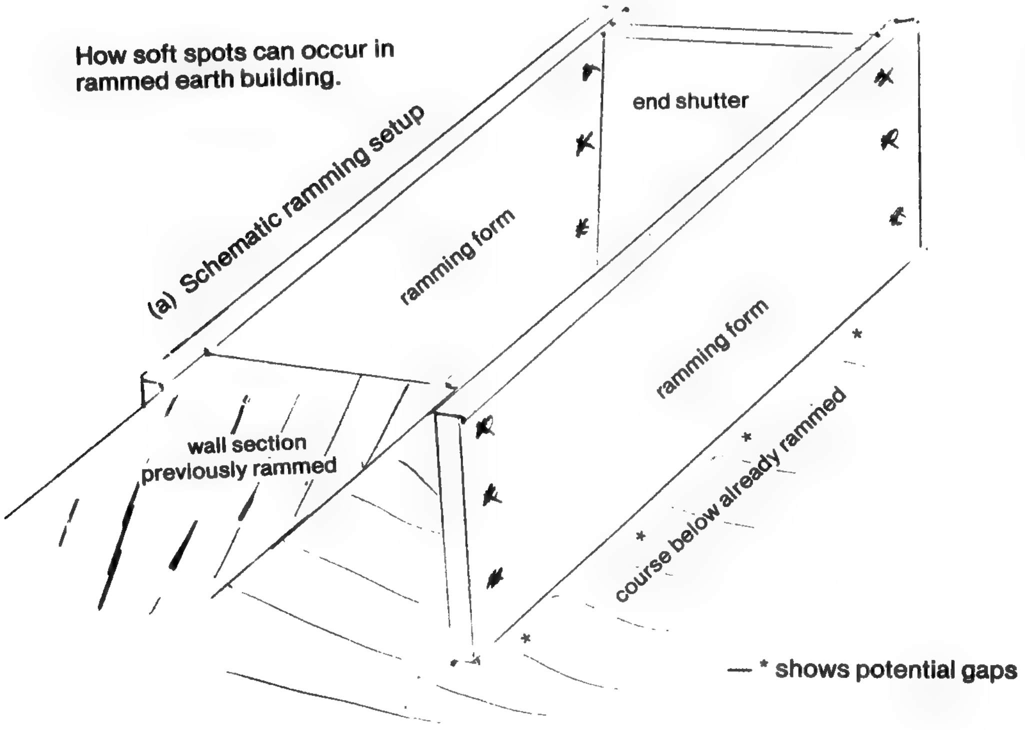
5. Several thin coats are always better than one thick layer.

6. Always start at the top and work down. Brush out drips immediately and avoid getting the stuff on woodwork and glass.

7. Like most repetitious jobs, rendering is fun if it's done by a group of people and it's a drag for only one or two.

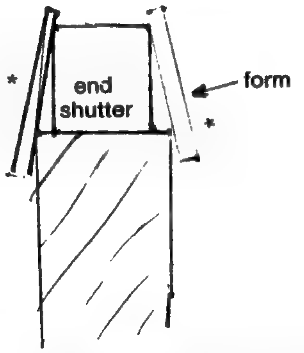
It should be clear now that rendering is an art, like cooking. People try out each other's recipes but quickly develop their own favourites. As with other aspects of building with natural materials, experience gives you an intuitive feel for the needs of a particular situation — soil type, wall surface, climate — and after a while you can produce a good render with very little experimentation.

How soft spots can occur in rammed earth building.

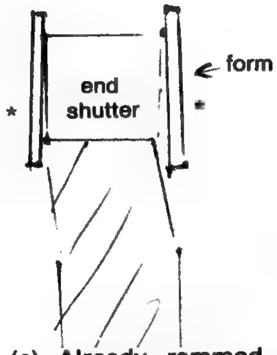


(a) Schematic ramming setup

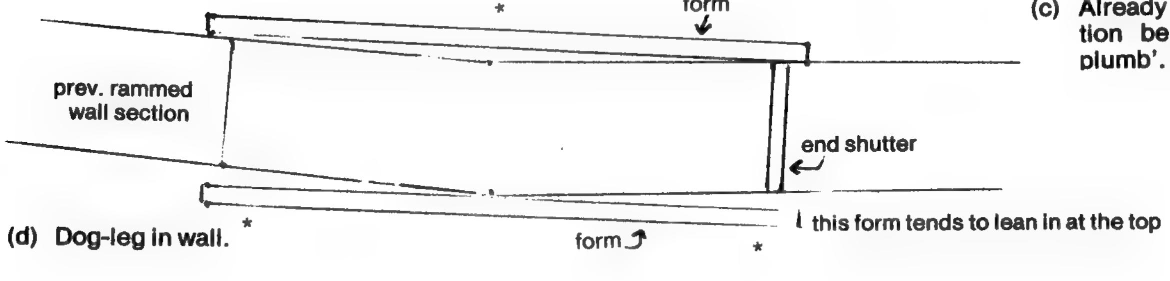
— * shows potential gaps



(b) Already rammed section below is too wide.



(c) Already rammed section below is 'out of plumb'.


form
prev. rammed wall section
end shutter
form
this form tends to lean in at the top
*
*
*

(d) Dog-leg in wall.

Before you coat

By Dr Robert Rich

Have you ever painted woodwork? If your reply is yes, you'll know how much preparation is needed beforehand. Instructions on a can of paint emphasise this. The same is true when you are rendering a mudbrick or rammed earth wall.

I **have** heard of mudbrick houses that were satisfactorily rendered without any preparation whatsoever — but perhaps these were cases of faulty memory (for example, where the wall preparation was the wife's job!).

All walls are likely to be knocked about during the building process and are subject to attack from borer species such as plumbers and electricians. Even walls put up by careful professionals are going to have some imperfections, so the slapdash sub-contractor or the learner-builder (however well-meaning) will leave lots of flaws.

In addition, walls built of clay soil (mudbricks, cob, wattle-and-daub) need attention because the clay shrinks as it dries. Walls made from sandy soil (rammed earth, pressed blocks) often have a surface which dusts away easily and may have soft spots.

Problem areas with **mudbrick walls** are likely to be:

1. Cracks in the mortar. These can join up to form a continuous "staircase" crack. In bad cases bricks can be pulled apart so that vertical cracks are formed.
2. Some kinds of clay compress under load, so a gap can appear as the top of the wall settles.
3. Gaps usually appear next to window and door frames and other rigid components.
4. The brickwork can have imperfections — bumps and hollows which fussy people can eliminate.
5. Even an improperly laid wall can sometimes be strengthened and made to look good. The first wall I ever laid was **terrible.** Among other faults, it had a big bulge in the middle. I have fixed it. Inside it is straight and plumb, thanks to a ¾ inch cement render (with an attractive brick pattern). The outside is also straight and plumb, thanks to hard work with an old tomahawk.

Rammed earth walls present a different set of problems:

1. The surface is often too powdery to hold render. The slightest knock will dislodge render from such a wall unless special precautions are taken.
2. There are often soft spots. These can occur for two different reasons:

(a) Ramming is done in layers. The bottom of a layer may be imperfectly compressed if too much soil or not enough thump went into it.

(b) Soft spots or actual cavities can occur if there is a gap between the forms and the already completed parts of the wall (see illustration).

Such gaps may occur in one of four ways:

(i) The forms are not sufficiently tightened and spread during ramming.

(ii) The previous layer is too wide because the forms spread when it was rammed. This leads to wedge-shaped gaps at the two ends of the form.

(iii) There is a slight dog-leg in the wall.

(iv) The previous course was slightly out of plumb (not vertical).

Grouting mixes

The substances you use to repair faults in a wall should be fairly similar to the stuff the wall is made from. Otherwise it will drop out of cracks and peel off surfaces. There is no point in using an inflexible sand-cement mix on a mud wall which is likely to expand and shrink with changes in moisture content.

There are three commonly used grouting substances.

A heavy clay wall will react to moisture changes. It is best to patch it with kaolin-rich clay. This is easily identified in summer: it is clay soil which goes hard when it is dry, but without cracking. It is worth carting a trailer load from some distance away.

If kaolin-rich clay is not available, you can make do with ordinary clay mixed with something that will reduce cracking. Successful examples I know of are:

7 parts clay to 3 of sandy loam;

8 parts of clay to 2 of the topsoil from over it;

6 parts clayey mountain soil to 4 parts river sand to 1 of cement.

Clays are very varied in chemical composition and the resources available to each builder are different, so you'll have to experiment on a small scale and see what stays on the wall. Generally, anything that sticks after a few days without peeling off will stay permanently.

Many clays are not very reactive (there is not much shrinking and swelling with changes in moisture content). Rammed earth and pressed blocks are stable. The best grouting mix for these is a sandy soil-cement mix, or the shop-bought equivalent (plasterer's sand and cement). Cement content should be quite low compared to concrete. My usual is one part cement to 10 of sand.

If the mix is too strong it can come off the wall in big chunks when knocked because the wall and grout do not act as a unit. The same kind of failure can occur if the mortar in a brick wall is much stronger or much weaker than the bricks. In hot weather I also put a bit of lime into the mixture. This slows down the rate at which the stuff "goes off".

Technique

Wait as long as possible before grouting. This gives time for natural processes like shrinkage and human damage, which may be the result of afterthoughts such as pipes and conduits and the installation of fixtures. Premature grouting can be a waste of time, but at least it does no harm and might give you some practice.

Preparation

The first step is to ruthlessly remove all weak, loose stuff. A crack that goes right through a wall should be attacked from one side, grouted to midway in the wall, then treated from the other side. Also, it should be grouted at the top before it is cleaned out lower down: an arch-like effect holds the wall together.

I clean up a wall using a light tomahawk, a large screwdriver and a wire brush. Deep cracks are hosed out. Soft spots in a rammed wall are removed, if necessary to half the thickness of the wall (don't worry, that is extremely rare).

Occasionally the surface of a rammed earth wall can be very powdery. Renders such as whitewash will peel off such a wall. My solution is an "undercoat" of cement render, a layer of sand-cement mortar. Often this needs to be keyed in by pockmarking the wall surface. G. F. Middleton recommends making a regular array of holes in the wall with a springhead roofing nail hammered into each hole. I have tried this, but found it no improvement over ½ inch deep holes without the nails.

It is possible to alter the appearance of a wall at this stage. Mudbrick houses built 30-40 years ago were often plastered smooth, so they looked just like any cement-rendered brick house.

A rammed earth or formwork cob wall can be made to look like mudbrick or dressed stone, or a mudbrick wall can have its mortar joints change location. This is done by making deep scratches in the right places with a screwdriver and later filling in any marks you want to hide, like mortar joints and cracks in the wrong places. You can have a lot of fun this way. One day, when I have nothing better to do, I'll make a wall look like a jigsaw puzzle.

Application

Mix up your favourite goo to a mortar-like consistency. Thoroughly wet the wall. On a good surface it is sufficient to fill gaps, cracks and hollows. On a poor surface it is necessary to wipe stuff everywhere. Big hollows will need to be filled in several layers.

The mix will stick better if it is thrown on, rather than wiped on. You'll soon learn not to throw too hard (your face is usually close enough to get spattered).

Spread the stuff on the wall using clean, wet steel. For big areas I use a trowel; for fiddly, hard-to-reach parts a scraper.

After 1-2 square metres have been treated, I wash over the lot with a paintbrush dipped in water. Some people prefer a wet cloth. This eliminates all roughness and gives the wall a finished look.

Follow-up

Sand-cement grout is in a just-plastic stage about a day after application. Clay-based grout will stay soft longer and, depending on the weather, will be just-plastic two to five days later.

You can greatly improve the strength of the wall surface by doing a bit of mudsmithing at this stage. I use a light rubber mallet to systematically tap all over the grouted surface. The grout is pushed hard into the underlying wall surface. Incipient cracks will be compressed and may not reappear. Improperly bonded bits will sound hollow. You can remove them and start again, or nail through with a galvanised flathead nail and cover with a thin new layer.

This treatment is especially useful when large volumes of grout are put on, for example in filling hollows in a rammed wall, or filling a gap above a mudbrick wall that has settled a lot.

Despite anything you can do, you often get a lot of small cracks developing in the grout. These are not usually weakening. If they are not numerous, it is often easiest to fill them with render. If they worry you it's easier to simply leave enough time for them to appear — say a few weeks — and then fill them by brushing into the cracks a wet mix similar to the original grouting mix.

If your mix contains cement you should increase the cement content. For example, my favourite grouting mix has 10 per cent cement, but my crack-filling goo has 25 per cent cement (but I need far less of it).

Cement-based grout should be allowed to dry at least a week before rendering, longer if small cracks appear. Clay-based grout needs even more time. The trick is to arrange other work to be available during this time, such as painting woodwork, making and installing built-in furniture or the like. Then you won't have the time to be tempted to render too soon.

A last word

All of this might seem to be very time-consuming. Is it worth it? Well, the other day I was setting out to render inside a mudbrick workshop. I didn't bother to do much in the way of preparatory work, just filled the worse cracks. As a result the rendering was much more difficult and took quite a lot more time and materials. Proper preparation would have taken me no more time overall, would have saved me money, and led to a better-looking job.

Appropriate Building Materials

A catalogue of potential solutions

Roland Stulz, SKAT/ITDG, St Gallen, Switzerland, 1983, paperback, 324 pages, illustrated, price $19.95. Distributed in Australia by Second Back Row Press, PO Box 43, Leura, NSW 2781. Add $2.00 postage if ordering by mail.

From Switzerland comes this resource book for builders. It gives information on building materials, including earth, stone, timber, bamboo, concrete, fired bricks and natural fibres, with examples of the techniques which turn these raw elements into foundations, floors, ceilings, walls, mortars, coatings and roofs in houses (traditional and experimental).

Marvellous illustrations show, for example, rammed earth shuttering forms and rammers (tampers) from Sweden, Germany, Australia, Brazil, Peru and India. There is a good international bibliography and keyed margin references throughout.

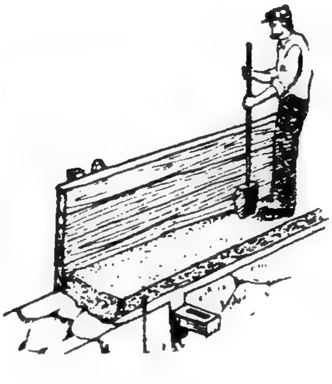
A house cannot be built without fundamental knowledge of construction and building materials. Building materials which are produced with intermediate technology therefore have to be prepared and used with the same great care as a high technology product. Otherwise the user may be disappointed by a poor result of his work.

DAGGA PLASTER

- Dagga plaster is a mixture of clayey soil, stabiliser and water.
- Good soils for Dagga plaster contain 2 parts sand + 1 part clay.

Red and brown laterite clays found in the tropic zones make excellent Dagga plaster.

- The plaster is improved by adding lime or cement as stabilisers and asphalt for waterproofing.
- A good mixture is 1 part lime or cement + 9 parts soil + asphalt + water.
- Dagga plaster is applied on previously moistened earth or adobe brick walls with a thickness of about 1 to 1.5cm (½ inch).



Mass mud mixing

Rob Thomson's letter to the Earth Building Forum was passed on to us by them with the hope that its publication in Earth Garden may result in some interesting replies on the problem of mass mixing.

I have been a frustrated mudbrick enthusiast for many years, and now having turned 52 and losing some of my youthful vigour, the thought of manually mixing mountains of mud to manufacture mudbricks, cools my ardour. Especially in this location where the mud is sticky.

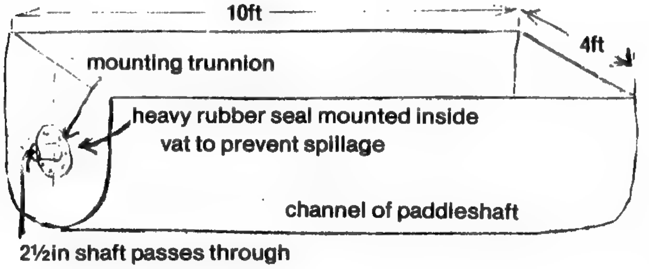
Reluctantly I turn to the idea of mechanical mixing, so that the ecstasy/travail ratio can be improved.

In numerous publications there is mention of using a front end loader to heap the soil and then driving the machine back and forth through the wetted mass. This leaves me cold for various reasons, although others are happy with it.

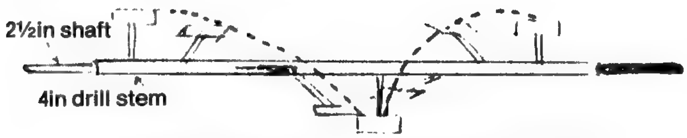
Having seen a number of photographs of pugmill type mixers (Hans Sumpf of California uses them), I am keen to make one of those, and to this end I've started to collect components.

Some time ago I bought an old mixer vat from a butter factory. It is 10ft long and 4ft wide; it has a half cylindrical bottom and a rectangular open top, somewhat like a deep horse trough. The proposal is to mount this vat on a heavy channel iron frame borne on a tandem light truck undercarriage, with an A-frame at either end to support the vat at the centre of curvature of the bottom section. I have made these supports with a hollow pivot bush so the mixing shaft can run through these support pivots.

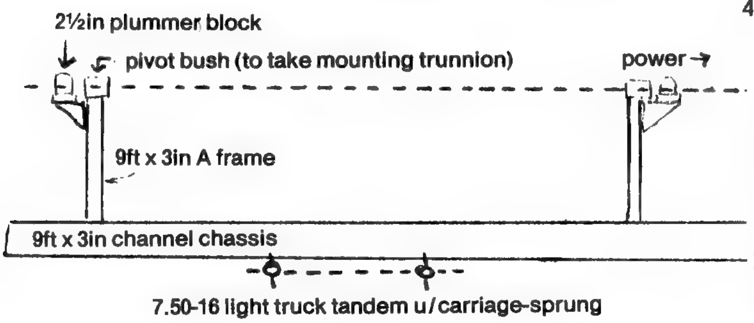
VAT


10ft
4ft
mounting trunnion
heavy rubber seal mounted inside vat to prevent spillage
channel of paddleshaft
2½in shaft passes through

PADDLESHAFT



(paddles to be installed in 1 or 2 spirals around shaft)


2½in plummer block
pivot bush (to take mounting trunnion)
power
9ft x 3in A frame
9ft x 3in channel chassis
7.50-16 light truck tandem u/carriage-sprung

This will enable me to tilt the vat about the centre of rotation of the mixing shaft. The idea is to lock the vat upright to load a mix. After loading the machine can be towed by a tractor to the moulding area while mixing.

The mixing power will either be a stationary engine mounted on the front A-frame, or a telescopic shaft from the tractor PTO. At the moulding area the vat can be tilted — it will probably need power tilt — and the machine driven forward to leave a pile of uniformly mixed mud ready for shovelling into moulds.

Apart from saving a lot of manual labour, I feel that I should be able to have easy control over mud mixing and consistency. Such a machine can also be speedily moved from place to place with ease.

Of course this idea would be outside most people's budget. To have it made would cost thousands, even with a proven design. But by using scrap and salvage and having access to machine tools I anticipate completing the job for under $1,000. So far, most of the major components have amounted to about $250.

The part I need advice about is the design of the mixing paddles and the operating speed.

If any reader has advice or experience to offer, it could save a lot of time, effort and cost.

I propose to operate the paddles at about 20 mph, but if drastic change in speed is required, costly reduction gearing may need change.

The intention is to extend the paddles to within ½ inch of the sides and have them sweep 90% of the length — that is to say 9 inch width paddles on 10 inch centres. Perhaps 100% is necessary, perhaps 75% will do? This all has bearing on power requirements.

There are two other aspects — depth of paddle and angle. I am thinking of a paddle 6ft deep and with a 30% positive rake. I fear that a flat paddle may splash mud around too much.

Perhaps there may be owners of successful machines who would allow me to come and inspect their pride and joy?

Any help will be greatly appreciated.

Rod Thomson, Ellerslie, PO Box 9, Thangool, Qld 4716.

Details of power tilt and reduction drive not finalised.

Pivot bush supports vat and allows tilting action. Plummer blocks support paddleshaft running through centre of mounting trunnions.

Late thought: Perhaps worn agricultural cultivation points may make good paddles? They can be bolted on and so easily be removed for modification or repair. They have a built-in angle and are made of hard wear resistant steel (Good thinking, Rob!).

Frugality as an ethic

Bill Metcalf wrote this paper, titled The Ethic of Frugality, for Eco Info, the then journal of the Queensland Conservation Council (QCC) in June, 1973. It's startling in its similarities with our essay, The Frugality Theory in our HARD TIMES HANDBOOK (reprinted in Earth Garden 42) and well in tune with the theme of our book. The more things change, the more they stay the same!

Bill, now a senior teaching fellow in Australian Environmental Studies at Griffith University, Queensland, was responsible for the Earth Garden reader survey (also in EG42) — Keith and Irene.

By Bill Metcalf

Several speakers at the recent Symposium on Survival, SOS '73, have stressed that we, as people interested in conservation and ecology problems, must change our lifestyles. Suggestions ranged from social ostracism of our friends who smoke, to the formation of self sufficient rural communes. On the assumption that the first is too minor to have meaningful consequences, and the latter too monumental to be implemented yet by more than a few QCC members, I propose a more modest lifestyle change. What I suggest is an "ethic of frugality".

To be frugal means "not wasteful, not spending freely or unnecessarily". For an ethic of frugality to have meaning, it must apply to resources as well as money. Such an ethic can be implemented by any one of us in our current social situations. It is not necessary to run off to the woods, or drop out. Thus the main advantage of the "frugality ethic" is that it is easily implemented by any one of us.

In an article in the journal **Science**(1) the authors describe how environmental problems in China have been halved by the thoughts of Mao. "Maoism ... is first and foremost an ethic of frugality, of 'doing more with less'". In Chinese industries and homes, to waste is a sin. It is ethically good to discover new uses for items which would otherwise be discarded and perhaps result in pollution. "Chinese science and technology is being asked to focus more of its attention on comprehensive utilisation ... of the 'four wastes' — waste material, waste water, waste gas, and waste heat".

But this is far more than an industrial recycling campaign. First, it is seen as preferable to avoid using a resource if possible. For example, in numerous processes, increased care and labour may reduce the input of energy. Also this ethic of frugality is applied to the individual in his private life. He knows it is sinful to waste any more resources than absolutely necessary. What resources he does use, should be reused and passed on to his fellow man.

But what has all this to do with "modern" Australians, who are concerned about environmental problems? First, we must accept that, provided we live in a city, then we must use some energy and non-renewable resources. Second, we must learn that these needs can be greatly reduced, with positive results both personally, economically and environmentally.

For example, on the assumption that you are going to continue to travel to and from work, as well as out of the city on weekends and holidays, then you might wish to choose a frugal means of transport. For instance, a bus or fast train will use about 1000 BTUs (British Thermal Units of energy) per passenger mile, while an automobile will use 4000 to 8000 BTUs, a 707 jet, 6200 BTUs, SST (such as Concorde) 9500 BTUs and a helicopter 17,300 BTUs(2). Thus choosing to travel by train or motor coach, rather than by car, or air, could reduce your energy demand to one-sixth.

To travel by bicycle or to walk would be better yet! The dollar costs should be of minor importance to a true conservationist, but in any case, will favour the low energy use method. If, for some social or physical reason an automobile is still required for transport, the efficiency can be greatly increased by sharing with others — even picking up a hitch hiker on a holiday, allowing one extra person to "enjoy" the trip on the same resource wastage.

In many ways in our lives we can follow this ethic of frugality.(3) Washing clothes at a laundromat may not save any "laundering energy" but as a communal facility, laundromat machines will typically do the work of several home laundry services, thereby saving considerable secondary energy, that is, manufacturing and materials extraction. Obviously, it takes more energy to produce washers for several individual families than it does to produce one laundromat machine, which can serve the same number of families.

Food scraps can be placed in a compost heap at any suburban home, rather than thrown into the garbage can. The resulting compost can then be worked into the soil of a flower or vegetable garden, providing a high quality natural fertiliser. What might have been waste becomes a resource for your organic garden.

Many household appliances can be repaired rather than thrown out when broken. Easy repairability should be one of our criteria in choosing to buy (if we really must buy) any home appliance. Toaster and jug elements obviously spring to mind. To repair these rather than buy new ones, we not only conserve resources, but also save money, a rather handy coincidence!

Clothing styles change quite rapidly for the express purpose of duping people into the purchase of them at a rate faster than they wear out. Buying a style which does not date so rapidly can be frugal, if one must buy. By making a fashion out of old clothes (as happened with used jeans) the effective life of most garments can be extended greatly. Patches must be seen as proof of virtuous frugality and "with it" eco-styles. Canadian folk wisdom states: "Patch beside patch is neighbourly, patch upon patch is beggarly, but patch upon patch upon patch is frugality".

By a fortunate coincidence, all of these "ethic of frugality" ideas not only help us to live better, but also help us to live more cheaply. What should a person then do with the money saved in frugality? There are two choices, to spend it elsewhere or to save it.

To spend the money and still give any real meaning to the ethic of frugality, saved money, when spent, should go for ecologically sound purposes. Perhaps donating the money to Bangladesh refugees, or to an Aboriginal mission might be wise. Support of environmental groups such as QCC could help. The purchase of land, to prevent its exploitation by others, could be wise.

To save the money, it is important that we have in mind final use of the funds, such as, perhaps, a year of "sabbatical" leave, away from our jobs and homes and friends, when we commune with nature. A less esoteric goal might be an overseas trip. If the saved money is allowed to accumulate indefinitely in a bank it will be loaned to others who would likely use it for non frugal, ecologically harmful ends — thus negating your good deeds.

Many of us were raised on traditional virtues such as frugality. Modern "liberal" ideas have denigrated many of these "old" virtues. They have suffered at the hands of modern advertising, inducing us to spend, waste and consume madly. A person who takes seriously the goals we espouse in the Queensland Conservation Council must seriously re-adopt the age-old ethic of frugality. Frugality can help us live better, more cheaply, and with less harmful ecological effects.

References

(1) Orleans, L. and Suttmeier, R.; "The Mao Ethic and Environmental Quality", **Science**, Vol 170, pp 1173-1176, 1970.

(2) Grimmer, D. and Luszczynski, K.; "Lost Power", **Environment**, Vol 14, No 3, April, 1972, pp 14-22, 56.

(3) Corr, M. and Macleod, D.; "Getting it Together", **Environment**, Vol 14, No 9, November, 1972, pp 2-9, 45.

WORTHY WORK

Willing Workers on Organic Farms (WWOOF) began in Australia in 1980, following the example of the original group started in Britain in 1971. There are now over 200 helpers and 100 farms, most of which are family farms aiming at subsistence, while two are alternative communities.

Worklists, giving details of host farms and acting as membership cards, are sent to all members, who then contact the farm of their choice and make a booking for a mutually convenient time, then turn up with sleeping bag and boots in hand.

Rules are minimal, and sent as guidelines when you join. The Golden Rule is our guiding principle, and specifics expected are: always book in advance, take no drugs, booze, kids or pets except by prior arrangement, be prepared to eat the same as your host (or cater for yourself) and **be prepared to work!**

Membership is on a per family basis and a single fee covers a couple travelling together. The fee covers a full year from the date of joining and is currently $10.00 for full membership in Australia ($12.00 in NZ and US), which includes worklist and five newsletters, or $5.00 ($6.00) for a travelling membership (worklist only).

WWOOF's aims are:

- To give first hand experience of organic growing methods.
- To give a chance to get into the countryside.
- To help the organic movement which is often labour intensive and does not rely on chemicals for fertility or persistent poisons for pest control.
- To give a chance to meet, talk, learn and teach, with other members of the organic movement in a "work for keep" situation.

Send membership fee or SAE for further information to Lionel Pollard, WWOOF, 7 Duncan Avenue, Boronia, Victoria 3155. Phone (03) 729 3831.

Farming with wildlife

Southern Tablelands, NSW

By Jacqueline French

Years ago I had a friend called Pam who would throw her banana skins out of the car window with the epitaph "Consign it to the ecology". She didn't throw out aluminium cans — she just felt that in the case of banana skins the ecology, like a dutiful butler, could tidy up after her.

Pam's catchcry might be a good description of the way we farm.

We came here eight years ago. The place was once a productive orchard, by then very run down, mostly blackberries, broom, thistles, brown rot, curly leaf, red scale, white scale, clover mite, aphids, citrus phytophera, canker, collar rot, fruit fly — the list could keep growing — old trees broken down by cattle, erosion, depleted soils, ruined fences and abandoned tractor tracks.

We've been trying to turn it back into a productive orchard and market garden. Not a conventional orchard. If we were going to farm "properly" we should have cleared the "scrub", shot the "vermin", grown perhaps two respectable commercial crops and sprayed on schedule.

Instead we're trying to develop a long-term, stable way of farming that protects, conserves and encourages the native flora and fauna. Instead of attacking the bush, clearing and levelling it with compact fencing until it fits in with our farming preconceptions, we're trying to fit in with the local ecology.

Ask me in 500 years or so if we've succeeded. But I think, tentatively, we're finding out that it's possible to farm while still retaining and encouraging the wild plants and animals.

What we have here is 300 odd acres, ranging from dry rainforest gorge to creek flat to cliffs, 12 acres under orchard and two acres of vegetables. We grow about 60 sorts of fruit, about 20 commercially, separated into 12 areas. One of these is sometimes wombat proof, four are usually wallaby proof and all are separated by belts of bush, creeks, gullies, ridges and wind patterns.

We're gradually learning what will grow here, under the conditions we've set ourselves, without massive care and tending; what wallabies, bower birds, kangaroos and lyre birds prefer to eat; what wombats, rosellas and silvereyes decimate and how to live with them. Swamp wallabies, for example, will beseige young apricot trees, usually with fatal results, not for the wallaby, but for the tree.

I've seen a wallaby consume three cases of apricots in an afternoon sitting with no obvious ill effects. It was back for more next day, though I noticed it did hop away rather slowly.

Apricot trees will grow out of wallaby reach if you prune carefully and protect them and the wallabies then become useful, as I'll mention later. Wombats, as another example, will usually ignore potatoes, tomatoes, pumpkins and watermelon, but let a watermelon split and the wombats get a taste of it and that's the end of your crop!

Corn is fine if your wombats are average stupid. An intelligent one, though, learns to rush the corn like a furry tank, beat it to the ground, and munch the corn, leaving the residue to spring back brokenly, cobless. We've spent the last eight years listing the preferred and dispreferred foods, territory ranges and habits of native animals, working out methods of growing a commercial crop within wildlife constraints.

But wombats and wallabies can also be "useful" in an orchard, as well as the bush surrounding the fruit trees. One example is the control of fruit fly. When we first came here there were fruit fly all year round, starting with the apricots, through the peaches and into the citrus in winter and spring. Up to now we've managed to keep fruit fly below problem level by a combination of efforts. Our earliest fruit orchard is nearest our neighbour, where the first infestation comes from. The later fruit is progressively further and further away, each orchard separated from the other by belts of bush.

We start picking stonefruit at the beginning of November and finish by mid-February when fruit fly numbers have really started to build up. We don't have more than 20 trees of any one sort ripening at the same time in the same orchard. Fallen fruit is cleaned up as soon as possible by wallabies, wombats, bush rats, sheep, chooks and a range of other predators, finishing with us.

We also pick our fruit as soon as possible, and fruit "stung" by fruit flies seems to fall from the trees earlier. Most breeding up, I think, takes place in the fallen fruit.

To keep up the diversity of fruit in the orchards we try to "niche plant", to take advantage of micro-climates as much as possible, so that in one orchard there are avocados flowering 20 feet away from peaches in ground frozen for three months of the year.

Maybe "consign it to the ecology" could best be described in these three stories.

Story No 1. When we first came here the new citrus shoots were covered in aphids. The damage was enormous and we began to investigate spraying. Two weeks later there were no aphids to be seen, but masses of ladybirds whose larvae eat aphids. If we'd sprayed we would most likely have knocked off the ladybirds and bred resistant aphids.

Story No 2. The previous owner but one shot everything he could, including possums and it wasn't until we had been here about five years that the possum numbers had increased enough to harm the fruit. We were worried and considered using possum traps because there didn't seem to be any way of growing fruit with possums.

Then, about three years ago, we heard a strong, deep hooting at night and the death screams of possums. The gorge had become the home of a pair of powerful owls, whose preferred food is possum. The possums haven't been a problem since then, while the owls have nested twice.

Story No 3. We keep free range chooks, which scavenge fallen fruit and scratch the mulch around the fruit trees. Last year, however, a giant Lacy monitor lizard moved in, 6ft long and 18 inches high at the shoulders. It started eating eggs and progressed to chickens, but at least it hibernates, so we can raise chickens in winter.

The only predator for giant monitors around here are humans — us — at the end of the food chain. The ecology won't come to the rescue, so this has become one of the sacrifices in farming with wildlife. Keeping fowls is still worthwhile but we're going to have to put up with losing some to big predators apart from ourselves.

We believe that it's not enough to refrain from killing wildlife or to stop dogs and cats from doing the killing. Habitat damage has probably led to more extinctions than direct attack — the effect is just further removed from the perpetrator. It may come in many forms, from the obvious clear felling to overstocking with cattle collapsing a bank of wombat burrows or the nesting places of platypus or water rats, "tidying up" bird nesting places or native food species, cutting down "brush" and improving open pasture that tempts wallabies into the open — and to glaucoma caused by direct sunlight.

A paddock of peas may result in more destruction than a roo shoot, but more quietly, as territory and breeding places are eliminated and animal food sources lessened by one paddock more.

It is possible to farm with wildlife — at a cost. Whether the cost is worthwhile depends on your values and on the long-term ecological implications of reducing an area to only the species directly valuable to people.

Chooks and orange trees — and no more fruit fly!

Learning about sheep

"Got one!" says Michael as Anne stands ready for their first go at drenching the sheep with garlic. They also fed them bran, molasses, carrots and salt.

Tolmie, Victoria
By Michael Hollowood

What inspired me to write to *Earth Garden* was the article *Tackling the tussock chewers* by Greg Baker in EG41. It's good to know that we're not the only ones who have tried to out-run sheep! I laugh now when I look back, but it wasn't funny at the time.

We came up with a different solution, however, which might be interesting to some of you. Here's our story.

My brother Stephen was down from Queensland and suggested that we get some sheep while they were cheap. This was during the drought. We said yes and left it to him to organise because we were all busy at the time.

It wasn't long before he turned up with 15 Border Leicester-Merino cross ewes and a Border Leicester ram, which he'd picked up for $3.00 each. We put them in the best fenced paddock and let them settle in for half the day. We had a water trough in the paddock, but I had been told that sheep were stupid and might die of thirst before finding the water. It took us the rest of the day to get them to go up to the trough.

Luckily we had a couple of friends visiting from the city to help, so there were four of us running them down. Actually, they did get thirsty in the end. We left them for a while after that, munching away happily and it didn't take long for them to start fattening up.

The next job was to get them out of the paddock into another one which needed eating down. We worked out a plan. I would go out and chase the sheep up to the gate and everybody else would set up the blocks. We had quite a few people and kids to set down in the right places — it was just like positioning a field for a cricket match.

So I did my sheep dog act. I would get the mob heading for the gate, but someone would be out of position, so they would get away and run right down the back of the paddock. I don't give up easily, so after a few choice words and another four goes at it we got them through the gate.

Then, like Greg Baker, I learnt that it's not good for the sheep to be chased about. We also found out that the ewes were pregnant, so we knew we'd have to work out something. We tried a few things, but nothing worked, so we stopped as soon as the sheep started to run about a bit.

One night I was watching TV and saw some drovers moving sheep along the road to get the feed there. Bingo! *They* didn't run all over the place. My sister Anne and I tried moving the sheep slowly, very slowly, foot-by-foot, inch-by-inch. It worked. It took just as long, but I didn't get puffed and the sheep didn't get knocked about.

From there we found that as long as we didn't run and panic them, we could get the sheep moving at a nice walking pace. They *do* start to run then, but I don't run after them, so they don't go very far, and I just start again.

I'm still learning more about sheep every day. Some days you can round them up in about 10-15 minutes and can get to within 10 feet of them before they keep moving. On some other days, usually when it's windy, you get within sight of the sheep and they're off. It just takes patience, and what harm can half an hour's walk with the sheep do?

Now that we could pen them up, we were in for some more fun drenching and de-licing the sheep. We made up a pen in a hurry, from chicken wire, posts and droppers. It turned out all right, but we didn't build a race, so once they were in the pen there was a lot of manhandling to do.

I was nominated for the job and, of course, I had had no experience with sheep. Where would I start? Well, I thought, the first thing to do is to grab hold of one. We made the pen small so they wouldn't have room to move — but what we considered small must have looked like a football field to the sheep. As I got hold of one, it spun around in a circle and I slipped and ended up sitting in the mud. That's about all it takes to get me fired up! When you've got nice and dirty, you might as well get on with the job.

This time the sheep knew that I meant business, so they all headed for one corner. I grabbed the nearest one and lifted it off the ground. It kicked a bit, but then gave up the struggle. I dragged the ewe as gently as possible, remembering she was pregnant, as far as the gate where Anne had the garlic, bran and molasses mixture. We had decided we were going to give the natural way of rearing sheep a go and see for ourselves whether it worked or not.

I held each ewe on her back with her head in my lap. Then I would get the mouth open while my sister would give her a spoonful of the mixture. By the end of 15 ewes and one ram (a tough sort of fellow), I'd had it. I smelt like sheep and garlic and I was tossing up about the natural way. Maybe chemical drenches weren't all that bad?

The ewes had their lambs right in the middle of winter. We were told we'd lose some and thought we would, but we didn't, despite one newborn fellow deciding to take a swim in the freezing cold dam. All we could do was to stand there and watch. He was right though. After swimming around in circles for a while, he finally made it to the bank where his mum was waiting anxiously.

We ended up with 10 males and seven females, so we also got two sets of twins and a lot more work. The next job was marking the lambs and getting the ewes shorn. We did the marking ourselves and got a shearer to come and do the sheep. Before he came up we noticed that a few of the sheep and lambs were coughing and that all of them had the "trots".

The shearer put us right when he saw them. He said they were flukey, had lice and the lambs were underweight for the amount of feed that was around. He did the shearing and Anne said we would drench them with garlic. I sort of looked at the sky, thinking why did she tell him that, we'll be pronounced crazy?

"Oh, that's interesting," said the shearer. "Please tell me if it works." He said he couldn't afford the chemical drenches he uses and sometimes lost a few sheep from them. Later we penned up the sheep and gave each one two garlic tablets, then washed them with garlic and eucalyptus oil solution, finishing off with a dusting of derris dust, making sure not to get any in their eyes.

We also fed them bran, molasses, carrots and salt, all mixed up, which we put near the water trough and found they loved it and would watch with interest every time anyone went near the trough. No sooner had you got back to the house than they would be at the trough fighting over the stuff. This, with a change of paddock, cured them as far as we know. Their weight increased, the coughing stopped and their droppings hardened up again.

When the shearer came back to shear the lambs he couldn't believe his eyes and straight away offered to buy the female lambs. We'd better get rid of them too, because the ewes are pregnant again and we don't want to be overrun with sheep.

To sum up: I think that if you adopt the natural methods, you've got to drench the sheep more often or feed them the garlic mixture more often, which we didn't do in the beginning. We also left them too long in the one paddock, which wasn't a well-drained one.

But we have our own wool now. Anne has started spinning and is doing quite well. My brother Stephen had a go and found it quite relaxing and doesn't do a bad job either. I had a go, but I'm all thumbs, most of them green, so I can make up for it in the garden.

It's only two years since I made the move to the

Getting the soil into shape to start the vegetable garden.

country with my mother and sister, although I've been trying to live in the country on and off now for about 10 years. There were a lot of distractions, like travelling around Australia and running out of money to buy some land. Not being a good saver, it took me a while to get there.

Anyway, we've got a bigger bit than I was looking for. I only wanted about 10 acres, but wasn't having much luck finding the right block. Some of the land I was shown was hopeless — no water, no topsoil, no shelter and no electricity (I know some can do without that, but I can't), but there was always the chance, they said, of finding gold, or tripling your money when the land booms!

In the meantime, my mother and sister decided they would rather live in the country than in the city, so they started looking for land too. We often found it wise — and fun — to look together. Three heads are better than one, they say. We picked the Mansfield area to look around on one of those trips. We didn't go for anything we'd seen and were about to call it a day, when the chap showing us around said he knew one other block up at Tolmie.

We decided to give it a look. It was 50 acres of undulating land, partly fenced and divided into three grassed paddocks, with bush around the outside of the property. We walked up a rise and, looking down, we saw a big dam the size of an Olympic swimming pool, and it was spring-fed too. We thought it wasn't a bad view and there was a power pole not too far away, so we decided that the property would be big enough for the three of us — and the house could go on that rise.

We sold up in Melbourne and my mother and sister moved up here even before the house was built because a friend nearby offered us his holiday cottage. Tolmie is up about 1000 metres, just enough to get a bit of snow in the winter.

I stayed in Melbourne for a while, only coming up at weekends. Then I found a job in Mansfield and now live here as well.

I love gardening. There is something about putting a seed in the ground and watching it grow that makes life wonderful. Like other people I know, I find the garden a good place to meditate about life, seeing all the different shapes, colours and foods appear out of nowhere. The birds, lizards and insects are great to watch.

I grew a good amount of vegetables when we lived in Melbourne and found it fairly easy. It's been a bit different here, though, with the short growing season. We have to get things started well with some of the plants started indoors. The soil here is not as rich as in Melbourne, but we've been mulching and composting it into shape and now it's coming along nicely. We even had a good crop of tomatoes this year, which is one of the hardest things to get to ripen here. We usually end up pickling them green. Swedes and potatoes are the easiest plants to grow in this climate.

It's amazing how many animals you can pick up for nothing. We did a trip to Mansfield one day and collected up two ducks, three big hens, two bantam hens and two roosters, one nanny goat and one wether goat. We looked a sight, with the car and trailer packed full, but that's the way to get them. The chooks haven't stopped supplying us with eggs yet and one of the bantam hens has hatched out a couple of chicks and the nanny goat is pregnant.

So, it never stops, does it? There's always more animals on the way and more adventures living this kind of life.

That's all I've got to say. I've learned a bit and have a lot more to learn and I know some of that will come from *Earth Garden*.

Thank you. God's peace be with you all, Michael.

The story of Sage & Lilly

By Armin Ptak

In the Adelaide Hills there was someone who went to an auction and bought two big dappled donkeys. He got them into his paddock and there they were. He could not do anything with them.

Unfortunately, nothing was done for them either. They had to live mainly on Salvation Jane (or Patterson's Curse) which is poisonous to horses and donkeys and destroys their livers.

While those poor donkeys were suffering quietly their hoofs grew to awful proportions, making their lives still more miserable. However, a young member of *The Australian Donkey Breed Society* saw those animals and thought they were great. She put some of the Society's newsletters in the owner's letterbox and a while later started to talk to them, pointing out the dangers of Salvation Jane and the necessity of cutting the donkeys' hoofs.

The owner, however, did not want the two animals any more and as they were rather hard to sell had decided to give them to the zoo for animal food.

So one morning I was called to the phone and there was good Sue trying to explain to me how wonderful these two donkeys were. She advertised them as white and as dappled donkeys, strong and healthy except for their feet. Because I have a soft spot she touched successfully, I decided to accept them against a certain fee which was not really overwhelming.

A few days later Sue Peterson and her friend Sue Long set out to get the donkeys to my stud. Both of them knew that I would not accept them if they did not live up to their description on the phone. Anyhow, they did and so did their hoofs, as you can see in the photo.

The stallion had the shells or nails of his hoofs growing so elongated that he had to walk on his heels. The mare had them just as long but by some good luck for her they were split in many places allowing her still to walk properly.

Seeing their plight, I really felt sorry for the pair. My first action was to oil their hoofs and to worm them. They were soon enjoying the good hay. The next morning I went to work on their hoofs.

Meanwhile the pair got brand new names. The stallion was named Sage and the mare Lilly. I admit that Sage has the most wonderful temperament. He was very co-operative when I rasped and cut away his hoof

elongations. After the treatment he had to learn to walk properly again and it took him about two weeks to drop that heel walking gait.

A few weeks later I broke him in for riding. He is a good performer, but he often still suffers from the neglect of the past. Now, after three months, he has learned to go in harness, but excursions have to be brief while he is still a bit tender in the feet.

Lilly was at first a very sceptical donkey and not very co-operative when I did her hoofs. However, she is now very sweet and responsive. Because of all the upheavals in her life and the Salvation Jane diet she had a miscarriage. Her tiny baby had deformed front legs. I felt sorry for Lilly to have lost an object of her love, but at the same time I was pleased I did not have to have a little foal destroyed.

This is the story of Sage and Lilly. So much for humans and their responsible attitudes. I hope that *Earth Garden* readers will spread the word that owning an animal means owning a responsibility. We should start our days by thinking first of our responsibilities, be they persons, animals, or our environment.

As much as Sage and Lilly are grateful for the help they received and are trying to do something in return, so much will our friends and our trees give in return. The end result will be, in many cases, a better world.

For people who own donkeys and need some help with training and handling them *The Australian Donkey Breed Society* will usually have some people who know how to solve donkey problems.

How to get in touch with the Society:

In South Australia, contact the secretary, Hope Smith, C/- Mitcham Post Office, SA 5062; Queensland secretary, Jenifer Simpson, Booloumba Creek, MS 16, Maleny, Qld 4552; Western Australian secretary, Maureen Waters, Lot 31, Thomas Road, West Byford, WA 6201; Victorian secretary, J. de Bruijne, PO Box 43, Silvan, Victoria 3795.

Armin Ptak, who runs The Roaring Lion Donkey Stud at Undalya, South Australia, wrote Donkeys at work in Earth Garden 37.

CULTIVATOR

This is the cultivator I purchased from Peter Robinson of Kangaroo Flat, Victoria (Small Farm Equipment, *Earth Garden 38)* for use with my donkeys.

Because of the tough conditions here it has had to be drastically altered. The back wheels needed to be transferred from the centre, where they were well hidden, to the outside. The front wheel had to be lowered by 37.5mm to accommodate the pull of the draught animals, which seemed to dig the three front tines in about 37.5mm deeper than the rest.

— *Armin Ptak*

more letters

Dear Keith & Irene,

I enjoy your magazine. Today I went to play badminton and when I came back discovered I've got three new baby lambs to bottle feed. So I must heat up another round of bottles. I add an egg yolk to each batch of milk I make up and it stops them scouring. I hope. So far it's worked with all previous lambs.

Yours sincerely, Robyn Wills, Nabawa, Western Australia.

Dear Keith & Irene,

In the recent elections at our annual general meeting I became the Networking Co-ordinator for the **Co-ordination Co-operative** at Tuntable Falls. I would like to extend an invitation for any community or person to exchange info or ideas on communities and networking.

Whilst I enjoy and know my friends enjoy all the media attention paid to Nimbin, I wish I could see more programmes giving a State-by-State description of other communities similar to ours. Big Country took a slice of Nimbin-Tuntable, also Channel 10's Eyewitness News (Sydney).

I support the idea of the Australian Association of Sustainable Communities (see **Earth Garden 42**). In regard to international communities, the Farm in Tennessee, USA, Communities magazine from Twin Oaks and the Alternative Communities magazine from The Teachers in Bangor, Wales, all give a good picture of sustained development.

As in most communities, work and official positions are unpaid, so please enclose two stamps to cover our costs when writing.

Yours faithfully, Richard C. Bingham, Upper Tuntable Falls Road, Nimbin, NSW 2480.

Dear Keith and Irene,

Your article **Compost power** on Jean Pain's methods in **Earth Garden 42**, matches one of the advertisements in **National Geographic**, Vol 162, No 5 (November, 1982). Headed **Safer Forests, fertile land**, it reads:

"Every year thousands of acres of land are ravaged by forest fires, and are then eroded by elements. Andre Martin from France has developed a method of clearing forests of fire-prone dead wood and scrub, then converting these forests wastes into organically rich humus which can be used to re-fertilise the land.

"Andre Martin's Rolex Award for Enterprise is a just reward for a highly original and practical solution to this environmental problem."

All the best, John M. Last, Gladstone, Queensland.

Dear Keith, Irene & Melissa,

We have been readers of **Earth Garden** for over five years, having first come across it when we were looking for information on homebirth. Since then we have bought EG regularly from our newsagent, but would now like to subscribe, if that helps the good work and keeps EG free of advertising.

EG has been a great inspiration to us. In the last five years we have moved to our own patch of bush, built a two room mudbrick cabin where our two children were born, and made at least a start on building "the big house" and moving towards economic self-sufficiency.

We have used many ideas in EG. One thing about this way of life is that nothing ever gets done exactly according to plan! We would like to congratulate you on the way you have maintained, in fact enhanced, the quality of EG over the years. The magazine is very, very professional, free of sentimentality and the "gee-whiznesses" found in some other publications of this sort.

We really like the travel stories. They are totally in keeping with the spirit of the magazine. Keep it up — it's great.

Peace and Love, Mike, Elizabeth, Gaia and Liv Puleston, Queanbeyan, NSW.

Dear Irene and Keith,

I have at last achieved my ambition to move out from what some folks call "progress". Euchareena is north of Orange and south of Wellington, NSW. It's a tiny village where dogs have freedom to bark, kids can yell and people can do almost anything they like. I have fruit trees, vines, flowers and a vegetable patch, even a spare paddock — in short, a tiny paradise. **Earth Garden** will make it even more so.

Best wishes, Mrs D. E. Anderson, Euchareena, NSW.

Dear Irene & Keith,

We, a German couple (27 and 31) want to live an alternative lifestyle and want to become as self sufficient as possible somewhere in the countryside, perhaps Western Australia. We have skills (he is a cabinetmaker by trade) and we are interested in building up a small handicraft business to earn a bit of money to live on.

At the moment we are living in Sydney to earn more money to be able to buy a shareholding. Our idea is to buy a van to live in and to travel to find the place where we would like to stay. We would like to hear from people who are already practising an alternative life who would like to give us some hints or contacts and share their experiences which could help us in our search for a place or in building up a small business.

We have to learn a lot about organic growing and permaculture. For that reason we would like to live and work with people who are already doing this, to learn from you. We are also interested in meeting people here in the city to share ideas, or just for having a good time together.

All the best, Jo and Doris Knackmuss, 9 Carlton Street, Manly (Sydney), NSW 2095.

Dear Keith & Irene,

Thank you for **Earth Garden!** We have finally bought our piece of land, forest really, at Coolibunia, just north of Nanango. We have years of hard work ahead of us and we are ready to enjoy it all. There is a lot of clearing to be done, mainly of dead wood as we plan to cut down as few trees as possible.

Already we are setting up a permanent camp in an almost rainforest area and will go there most weekends until we are ready to build in a year or two. We intend to plant in permaculture fashion, to promote rainforest conditions, with some cleared areas for vegetables, chooks, etc.

As buying our land took most of our cash we are on the lookout for good second-hand tools and materials, such as a chainsaw and tanks, etc. Maybe there is someone in the area who could tell us the best sources of supply? It would be nice to meet like-minded people in the area too. It's a beautiful part of the country and I know some **Earth Garden** readers must be hidden out there!

Our phone number during the week is (07) 358 1611.

Sincerely, Kez van Oudheusden and Lomas Dinnage, 30 Llewellyn Street, New Farm, Qld 4005.

Dear Irene & Keith,

We have at last moved on to our land after 6½ years of working, planning, hope, prayer. We feel we have arrived.

The first mail in our box was **Earth Garden.** We are always looking forward to its arrival. We now shall be making the effort to put into practice what we have learned from EG.

We feel this is a most exciting part of our life, both being in our mid-50s with our nine children now out leading their own lives.

Best wishes, Gladys O'Connell, Rainbow Flat, NSW.

Dear Keith and Irene,

Since last writing we have moved to our house at Carmila (at last!).

Our pise house is a goer. The wind generator is generating, the ducks are laying and the vegetable garden is producing. Won't be long before the fruit trees start bearing (I hope).

The last few years have been exceptionally dry for this area but luckily our creek has never dried up. We're looking forward to some wet "wet seasons" in the future. We enjoy and use our **Earth Gardens**; they are well thumbed.

Yours faithfully, Claire Mulder, Carmila, Queensland.

Philippa's in the saddle

By Mary Small

When 21-year-old English girl Philippa Smeed accepted an invitation from the Riding for the Disabled Association (New South Wales) to attend the official opening of the new indoor riding arena at Kellyville, she arrived in Sydney none the worse from her long flight but encumbered with a set of suitcases, a saddle and riding boots.

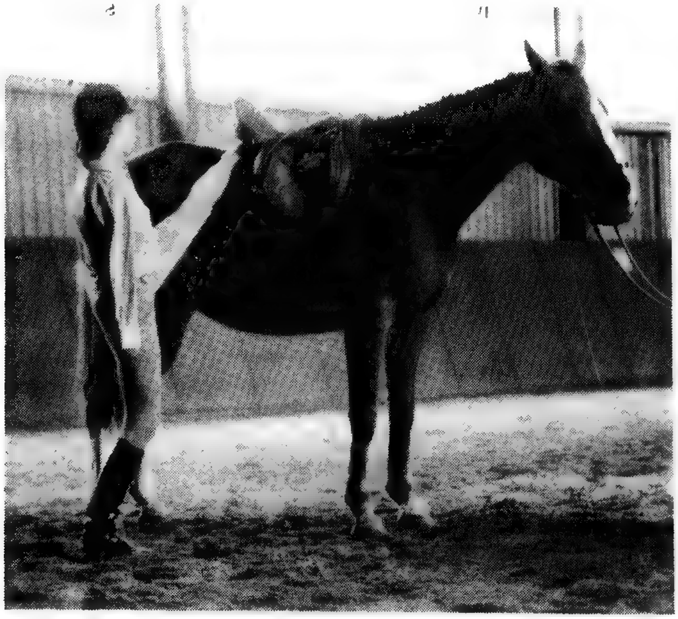
"The flight was fine," she said. "I sat near one of the exits where I had leg room to eat without being a nuisance to my neighbours. The only trouble was people continually tripping over my feet when they went to the toilet!"

Those clumsy passengers on Philippa's flight were probably so busy staring they forgot to take care.

Philippa also came to Australia to demonstrate her remarkable horse-riding ability to RDA groups throughout the country. During the 10 weeks she stayed here she rode a number of different horses to enthralled audiences of able-bodied and disabled people and the press.

Philippa was born without arms, the result of thalidomide. For most people such a handicap would be daunting, but not for someone like Philippa. From the age of 10 months when her grandmother Monica took care of her, she was encouraged to do everything for herself.

With natural ability Philippa pursued all the energetic pastimes of childhood as well as riding horses, first with the local Riding for the Disabled group then, when this proved too limiting, independently. By the time she was 10, Philippa had her own pony and since then has progressed to an amazing mastery of all things equestrian.



Philippa Smeed unsaddling.

Her suppleness and extraordinary balance enables her to cope with all aspects of stable management from catching, feeding and grooming the horse, to preparing for the ride. Tacking up has to be seen to be believed. Standing on one leg, Philippa lifts the heavy saddle from the ground with the other foot and places it gently and neatly over the horse's back. After doing up the girth, she puts on the bridle by sitting on a rail inside the stable door.

"Gloucester doesn't always co-operate!" she said with a smile. "She has a habit of moving her head just out of reach!"

Gloucester, a big skewbald mare, is her favourite. Philippa bought her from a Persian prince after having fallen in love with the horse when she first saw her being ridden in Windsor Great Park. When, by good chance, the horse came up for sale, Philippa was quick to buy her. In spite of the mare being big and headstrong, Philippa has taught Gloucester manners and they are perfect partners. They hunt, enter for one day events, show jump and compete in dressage competitions.

Guiding a horse when you have no arms is not a problem. The reins are attached to each stirrup similar to the method used to control and guide the drum horse in regimental or police bands. By sitting deep in the saddle and pushing her legs forward Philippa can sail over large jumps without interfering with or jagging her horse's mouth. It is even more amazing that she can cope with large natural fences at speed when hunting.

After leaving school at 16, Philippa qualified in typing and clerical work at the Reading College of Technology. For a while she worked at the Institute of Purchasing and Supply in her home town of Ascot but she found an indoor life was not for her. Visiting the Ascot Bloodstock Sales she purchased her first big horse, a four-year-old 16 hands high chestnut thoroughbred, Double Melody.

Driving through Ascot one day, former international event rider Major Derek Allhusen was amazed to see an attractive armless girl riding one horse and leading another. Intrigued he stopped to chat. The outcome of the conversation was an invitation to Norfolk where the major and his wife coached Philippa and her horse in the sophisticated art of dressage and show-jumping.

"She is without doubt a very determined and courageous girl ... a sympathetic rider, and an inspiration to the disabled and able-bodied alike ... similar in fact to the late Sir Douglas Bader."

Philippa only competes against the able-bodied; in horse events she is judged by the same rules as any other rider. She prefers big horses, not only for comfortable riding but also for safety reasons as her special stirrup reins could become entangled in the front legs of a smaller animal. During her visit to Australia she insisted that any horse she was required to ride for demonstration purposes had to be 16hh or over, to be schooled in basic dressage and be able to cope with crowds and camera flashbulbs.

Her demonstrations consisted of a basic dressage display and with saddling and unsaddling. Although the object of her visit to Australia was to promote the activities and benefits of the Riding for the Disabled Association, she was quick to point out, particularly to the press, that she did not consider herself handicapped in any way and was quite capable of leading an independent life. Her left foot, which had the strength to lift a heavy saddle and tighten a girth, could also delicately remove the broken shell from a boiled egg!

Philippa has now returned to England. At one time she ran a small exclusive yard of ponies and horses and took clients for treks in Windsor Great Park. Now she is more interested in buying, training and re-selling horses to good homes.

"They know me at the markets now, I've been there so often," she said. "As long as I keep my gaze on the auctioneer he knows I'm still bidding!" Her favourites are the coloured horses, skewbald and piebald. One of her latest acquisitions is a mare called Dolly Mixture, a pony that she feels would be ideal for an RDA group because of her nature and quiet temperament.

"As for my own future, I'm not really sure, but it will continue to be with horses."

Philippa made a big impact everywhere she went in Australia, not only with her courage but also her quiet dignity. I am sure that all those fortunate enough to have met her would want to wish her the best of luck and good fortune.

RIDING FOR THE DISABLED

The concept of providing horse-riding for disabled children and adults followed the personal triumphs of Liz Hartel, a Danish equestrienne who won a silver medal for dressage at the 1952 Helsinki Olympics. Her achievement was extraordinary, for Liz was a victim of polio, partially paralysed in both legs and only able to walk a few steps with crutches.

Pioneered by a group of English enthusiasts the Riding for the Disabled Association quickly mushroomed from small beginnings to include hundreds of active riding groups throughout the world. In Britain, Princess Anne is the enthusiastic patron of over 500 groups and in Australia, where a national association was formed in 1979, there are nearly 100 groups.

Many people think that horse-riding is unsafe for disabled people but *safety* is the key to the riding with horses and ponies chosen carefully for their "bomb-proof" natures, and the many helpers attuned to the riders' needs.

The majority of participants proceed no further than a very basic riding level but a few achieve great things and ride on their own, some joining pony and riding clubs. Most disabilities can be catered for providing the riders have the consent of their doctors and, if under age, the consent of their parents.

This outdoor activity offers many benefits for not only is it a recreation and a sport, but also a therapy. It gives those shackled by wheelchairs and crutches the chance to move freely and to venture into previously inaccessible places; it provides a stimulation and a social competitive outlet to others either physically, mentally or emotionally handicapped. Above all there is a personal feeling of achievement, however large or small. Most helpers involved with the groups have astonishing stories to tell about the progress of the riders under their care.

The Riding for the Disabled Association of Australia is a voluntary organisation. Anyone who has a little time on their hands and would like to help or find out more about the Association can contact the National Secretary, RDAA, c/- 7 Conrad Road, Kellyville, NSW 2153. Phone (02) 629 1710. Groups are always in need of helpers for the riding sessions and would be grateful for auxiliaries willing to venture into fund-raising activities.

Mary Small

Rattletrap Rosie

Mary Small, photos by Ron Ryan, Buttercup Books, Melbourne, 1984, paperback, 32 pages, colour photos. Price $4.50 (hardback $9.50) in bookshops or through RDA groups.

Rattletrap Rosie is a great book. The photos are big and in colour and there is one on each page. There isn't much text, but it's a good story. Rosie — a shetland pony — is cute and as you read you hope she will pull through and win. — ***Melissa.***

Mary Small is a speech therapist and also the dedicated, hard working editor of **Riding Free**, the quarterly magazine of Riding for the Disabled Association of Australia.

Her earlier book, **And Alice did the Walking**, with black and white photos by Lionel Jensen is published by Oxford University Press and sells in bookshops for $3.99. The RDA benefits from the sale of both books.

FOOD/HOLIDAY BARTER

Dear Keith and Irene,

In your HARD TIMES HANDBOOK you mention that people ought to barter or swap things. As I have a share in a holiday farm in the Blue Mountains (NSW), I would be interested in letting people use it between the main school holidays and long weekends in exchange for two weeks' supply of food, which seems to be a good bargain to me.

It's possible for me to take 4-9 people with me each time and stay between two days and two weeks. They would have to rough it, but there is horse riding, swimming and tennis. I would prefer a group of people made up of a number of families if possible. They could throw in some blankets and sheets each and share other expenses. With this idea quite a lot of people could have a break from the city rat race and all its problems.

Yours sincerely, Mr William S. Carr, C/- 31 Kylie Pde, Punchbowl, NSW 2196.

HERBS

HERBAL POULTICES
By Ron Haines

In *Earth Garden 42* Erril Holman asked in a letter for information on poultices.

One doesn't seem to hear very much about this most useful medication these days, so instead of writing to Erril direct, I thought it would be a great idea to share the simple procedures for making poultices with all EG readers.

Baillierre's Nurses Directory describes a poultice as "A local application used to improve circulation and relieve pain as in the use of kaolin and linseed". That's a poultice in a nutshell, it's as simple as that.

With a poultice, the filling is spread onto a cloth and applied directly to the affected part. This is in contrast to a *fomentation,* where the filling is contained between sheets of cloth.

When using a poultice I suggest that a layer of petroleum jelly (vaseline) or vitamin E cream be applied to the body area first to prevent the poultice sticking.

To prepare the poultice, have the herbs finely chopped and mix with cornmeal and hot water to make a paste. Spread the mixture onto a cloth and then apply to the affected area making sure that it's not so hot that it will burn the patient.

Remember:

Do not warm up a used poultice.

Do not let the poultice get cold.

Have a second poultice ready immediately upon removing the first one.

Poultices are excellent for enlarged glands such as neck, breast, groin and prostrate, etc, also for eruptions, boils, carbuncles and abscesses.

Here are a few poultice recipes:

- ⅓rd Lobelia, ⅔rd Slippery Elm — for boils, abscesses and rheumatism.
- Charcoal and hops — for gallstone pain.
- Charcoal and Smartweed or Golden Seal — for inflamed ulcers and sores.
- Grated carrot — for ulcers.
- Grated potatoes — for carbuncles and boils.
- Hyssop — to remove colour from bruises.
- Bread and milk poultices will bring boils to a head. This was used on my grazed knee when I was a boy and it always cleared up any infection.
- Bran and Lobelia — will ease sprains and bruises.
- Onion poultice — for boils.
- Bruised Elderberry leaves mixed with a little olive oil — for haemorrhoids.

The advantage of poultices is that you can experiment carefully. I have used a poultice of tea leaves to draw out a deep splinter in my foot.

Remember that boils and skin infections often indicate a vitamin deficiency and I am a great believer in taking a multi-vitamin capsule every day. Capsules can be quite expensive, so I make my own at about one-tenth the retail price, from natural ingredients. The formula is available to anyone who wishes to take the trouble of writing to me for it.

Ron Haines, Shiron Herbalists, PO Box 53, Goodna, Qld 4300.

Herbal Treatment for Common Ailments

Gregory Ah Ket, Currey O'Neill, South Yarra, Victoria, 1983, hardback, 159 pages, illustrated. Price $14.95.

Gregory Ah Ket, a co-founder of Compendium publishers, began to study traditional herbalism, acupuncture and massage from Chinese masters in 1976. This book is a thorough guide and reference source for making your own remedies from common herbs to treat simple ailments like colds, flu, headaches, sleeplessness, burns, bruises and cuts. There's lots of information on herbs and their properties, with illustrations by Abigail Villis to help you recognise these valuable medicinal plants.

Travel sickness
Ginger root (powdered)
Cinnamon bark (powdered)

Mix equal parts of the above with a small amount of honey to form a paste-like consistency: ½-1 teaspoon as required.

1 part Chamomile flowers
1 part Lemon Balm leaves
1 part Skullcap herb
1 part
Valerian root
1 part
Alfalfa herb
1 part Ginger root
Infusion: ½-1 cup as required, not to exceed 4 cups per day.

The Fragrant Garden
Autumn 1984

Large format, 40 pages, illustrated. Price $2.00 posted.

Jan and Michael Bailes' new, blue paper catalogue is out, with Australia's largest range of herbs, old fashioned plants, herbal teas, pot pourri, oils, insect repellents, even herbal kits to help you sleep or to arm you against sinus, headaches and arthritis. You can almost smell their fragrance.

Booklist of 500 titles covers herbs and also mudbrick building, self sufficiency, dyeing and children's books.

- *We have found that Lavender Oil rubbed on the back of the neck and on the temples soothes tension headaches and that for all headaches including migraine, Lemon Balm Tea taken at the onset (not when the headache's reached blinding proportions) really can help.*
- *A pleasant massage oil can be made by adding a few drops of a fragrant oil to almond or olive oil.*
- *Add 15 drops of a fragrant oil to a pint of vodka or any other flavourless alcohol to make excellent after shave.*

The Herb Society of Victoria

Box 239, St Kilda West, Victoria 3182. Newsletter, **Herbage**, monthly.

Meetings are held at the Burnley Horticultural College Hall, Swan Street, Richmond (Melbourne) on the first Thursday of each month (except January) at 7.45 pm. Annual subscription $12.00, pensioners and students $8.00. A Herbfest is held in November.

The Society encourages organic gardening and the exchange of herbal knowledge, but does not give medical advice. Activities include the maintenance of several herb gardens, field days and displays at horticultural shows.

A mixed plate

LEMON SQUASH

6 lemons
2 to 2½lbs sugar
4 pints boiling water
1oz citric acid
1oz tartaric acid

Mince whole lemons, or put in blender. Then put in a bowl with the other ingredients. Stir until sugar is dissolved. Stand overnight, strain through colander. **Dilute to taste.**

PS. The lemon which is left in the colander may be put in bread, cakes, biscuits or on muesli (after fishing out the seeds).

POMEGRANATE JELLY

4lbs pomegranates
4 pints water
sugar

Chop unpeeled pomegranates roughly. Put in a large pan with water and boil for 20 minutes. Strain twice through muslin — do not squeeze.

Measure, add equal amounts of sugar, cup by cup. Put sugar and liquid in a saucepan and heat slowly, stirring until sugar is dissolved. Then bring to the boil and cook until the mixture jells slightly when tested on a cold saucer.

Makes approximately 2½ pints.

Do not use over-ripe fruit for this recipe. If pomegranates are too ripe the jelly will not set successfully. Goes well on home-made bread.

PS. I'd always found it difficult to know what to do with surplus pomegranates until I found this recipe.

Barbara Greaves, Tammin, Western Australia.

MUD MIXER FOR SALE

Our machine for mixing mud for mortar used in the earth buildings at the Community of St Clare, Stroud, NSW, is for sale. It has a capacity of 6 cubic feet of mud each load and is fitted with internal paddles driven by a 5 HP petrol motor. There is a picture and explanation of the mud mixer in **Earth Garden 29** (page 29). Price $800.00.

Mail enquiries to Community of St Clare, Stroud, NSW 2425, or phone (049) 94 5303 between 9.30 am and 8 pm.

TO TAKE THE HEAT OUT OF RADISHES

Wash radishes and peel them. Cut into thin slices, sprinkle with salt and leave for a few minutes. Rinse under tap to remove salt. Place in dish with soy sauce and lemon juice.

TO CURE A BAD BACK

Get rid of your bed and sleep on the floorboards. Use a mat or a quilt.

FOR SKIN ALLERGIES AND RASHES

Boil bran in water and let it cool. Add the "milk" of the bran to your bath or dab it on.

Lenora Wolfe, Mallacoota, Victoria

◆

CITRUS PEEL MARMALADE

Instead of throwing away the skins of lime, orange, lemon, grapefruit and tangelos, cut them into one inch long thin strips and boil them in a little water with some sago until tender and the juice is slightly thick. Then add honey or raw sugar to taste. This makes a nice marmalade.

All fruit skins can be used together, or any on their own.

Maybelle Jocumsen, Currumbin Valley, Queensland.

Salads of India

Varsha Dandekar, The Crossing Press, Trumansburg, NY, 1983, paperback, 96 pages, illustrated. Price $6.95. Distributed in Australia by Second Back Row Press, PO Box 43, Leura, NSW 2781. Add $1.00 if ordering by mail.

*Varsha Dandekar's Indian salads are tangy and often spicy (though not as hot as you might expect) mixtures of vegetables, fruit and nuts with cooked and raw ingredients. They include yoghurt-based Raitas, cooked eggplant combinations, shredded vegetables and our favourite, Koshimbri, which has coconut, lemon juice and nuts, often in the form of peanut powder, as a dressing with tomatoes and cucumbers. We've enjoyed all the dishes we've eaten from this book. — **Irene.***

Mung Sprouts Salad
Moong Usal

This is an unusual way of serving sprouts but not too exotic. This salad tastes good when served with a yoghurt salad.

1½ tablespoons soy oil
⅛ teaspoon mustard seeds
⅛ teaspoon cumin seeds
1 package sprouted mung beans
¼ teaspoon garam marsala
¼ teaspoon salt
½ teaspoon lemon juice
⅛ teaspoon cayenne pepper (optional)
2 tablespoons freshly grated coconut

In a heavy-bottomed pan, heat the oil. Add the mustard and cumin seeds and in 15 to 20 seconds add the mung bean sprouts. Cook, covered, on low heat for 5 minutes. Remove lid and add *marsala,* salt, lemon juice and cayenne pepper. Mix well. Cook for 3 to 4 minutes, then remove from stove. Let cool to room temperature. Garnish with coconut and serve.

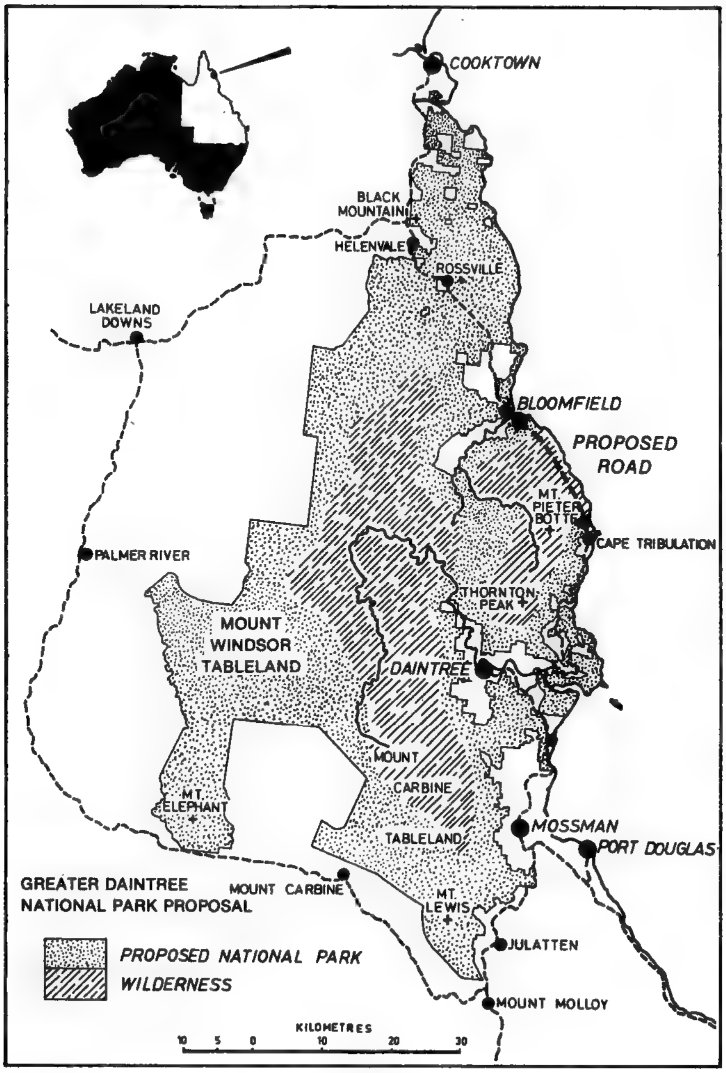
Serves 2.

Daintree Blockade

I've known the rainforest for most of my life. I know it, love it. That's why I stood in front of the bulldozers. That's why I'll stand in front of them again if ever they come back.

The rainforest is a living, breathing green animal, all of a piece. The trees are its lungs and bones, the earth is its flesh. Cut into it deeply enough and it starts bleeding to death. Haven't we destroyed enough of Australia? Will we let nothing of beauty and grandness remain? The Vandals who sacked Rome were Christian gentlemen compared with the people who put that damnable track through.

HARRY DICK, tin fossicker, rainforest guide and self-sufficient smallholder, of Kankaji Bay, Bloomfield, Queensland, June, 1984.



By John Seed

Sitting by the banks of the beautiful Woobooda River, a couple of miles from Bloomfield town in far north Queensland. Blue campfire smoke rises in the still morning air and is touched by the sunrays when it gets above the canopy.

This is the most northern of the blockade camps set up by conservationists to stop the Douglas Shire Council and the Queensland Government from bulldozing a 35 kilometre road through the heart of the Daintree River wilderness.

Earth's tropical rainforests are the very womb of life, containing fully half of the world's 10 million species. Projections based on satellite photographs reveal that all but a few fragments will be destroyed in as little as 30 or 40 years.

When considering these remaining fragments, a sobering consideration is presented by Arne Naess, Emeritus Professor of Philosophy, University of Oslo. He pointed out in a talk to Sierra College, California, earlier this year that for evolution to continue, huge territories are needed, such that no existing national parks are large enough. He claims that we may have "... effectively stopped evolution ... no new species will appear, of mammals and birds at least."

Lowland tropical rainforest is the most diverse and fragile rainforest type and in Australia, as in the rest of the world, the most endangered. Lending itself to various "developments", our lowland tropical rainforest has largely disappeared to cane farms, beef pasture, towns and real estate. The proposed Cape Tribulation-Bloomfield road threatens the largest remaining segment of lowland tropical rainforest in Australia and would compromise the proposed Greater Daintree National Park which is being considered for World Heritage listing.

Last December a small, month-long blockade slowed down, but was unable to prevent the slashing of a bulldozer track right through the area. The reason that the area has survived until now is the immense difficulty presented by the rugged, steep terrain. The recent track has now washed away in many places with grades as steep as 1:2.75. It is presently unusable and the scar would quickly heal — unless *Phytophera* has already been introduced (it is spread on bulldozer tracks from one infected area to another).

In the intervening months support for the Greater Daintree proposal and the protection of Australia's moist tropics has grown dramatically. Though the rainy season has been over for two months at the time of writing this (July 12), the dozers have not reappeared.

Two months ago, Douglas Shire Chairman, Tony Mijo, promised that work would be starting within a fortnight. By the time you read this anything may have happened, but it is quite possible that the "developers" are waiting, hoping that the numbers in the blockade camp will drop.

The Federal Government is adamant that it will not intervene before the next Federal elections, so the immediate task of conservation movements becomes one of protecting the area between now and the next rainy season. We need 150 committed people between Bloomfield, Cape Tribulation and Cairns for the rest of the year. As many of us can only stay a month or less due to other commitments, a constant influx of people is needed to maintain the blockade.

Both the Australian Conservation Foundation and the Wilderness Society have given the Greater Daintree campaign and the preservation of the moist tropical forests top priority this year. Dr Geoff Moseley, Director of the ACF recently stated that, just as 1983 had been the year of the Franklin, so 1984 would be the year of the Daintree.

In a few valleys around Cape Tribulation exist the most primitive flowering plants upon the earth *Idiospermum Australiense,* the first fruits. They have existed here, undisturbed by volcanic activity or incursions by the sea, for over 100 million years. When Australia was still joined to Antarctica, South America and Africa in the supercontinent of Gondwanaland, as the first flowering plants evolved on earth, these rainforests flourished here.

We must ask ourselves: will we protect our tropical forests, or will we be too busy doing more important things as they are carved into one hectare blocks (as is happening just south of Cape Tribulation right now)?

What you can do

So, how about spending your holidays this year at beautiful Cape Tribulation and lending a hand? Rainforest, mangroves, beaches, coral reef. Stay at one of the blockade camps (food costs about $20.00 a week) or, if you prefer, at one of the cabins at nearby Pilgrim Sands ($120/week accommodation for two) or at the youth hostel ($5.00/night).

Ring CAFNEC (070) 51 1204 for the latest information before setting off.

If you can't make it, the blockade needs donations for tarps, high tensile chain and locks (for people who choose to lock themselves up a tree or in a hole in the ground in the bulldozer's path), office supplies, stamps, banner and costume material, etc. Donations may be sent to: *The Tropical Rainforest Society (Blockade),* C/- Hans, PMB Cape Tribulation, via Mossman, Qld 4873.

If you would like to know more about the world-wide network to protect the rainforests, send a stamped addressed envelope to: *Rainforest Information Centre,* Box 368, Lismore, NSW 2480.

Daintree blockader buried in the bulldozer's path last December. Photo by Peter Mitchell from *The Trials of Tribulation,* published by the Wilderness Action Group — $6.95, plus postage from PO Box 116, Port Douglas, Qld 4871.

The rape of the Solomons

By Andrew Frame

The village of Kolobaghia on the scenic Marovo Lagoon has been disbanded . . . 200 people reduced to twenty.

This has been one of the less obvious effects of LPT (Levers Pacific Timbers) in North New Georgia, where its operations, now six years old, are desecrating the customary lands of Solomon Islands people.

Ruben Peepa is 76 years old and 53 years of his life have been spent in Kolobaghia. The village chief, an obviously passive, gentle man, now sits quietly, reflecting.

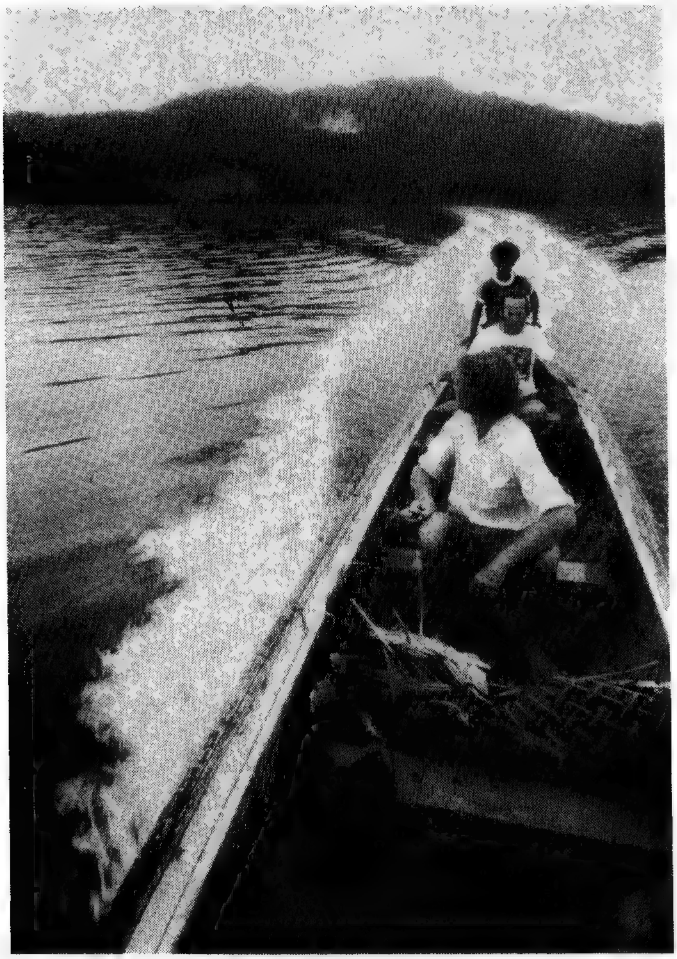
Six years ago LPT moved in and five years ago Ruben Peepa's *Wantok,* the Pidgin expression for family, and his friends began moving out. Now the coral paths are little trodden and deteriorating thatch allows penetrating shafts of light into decomposing huts returning to the soil. The life of a happy Melanesian village has faded while the old chief and his wife grew older.

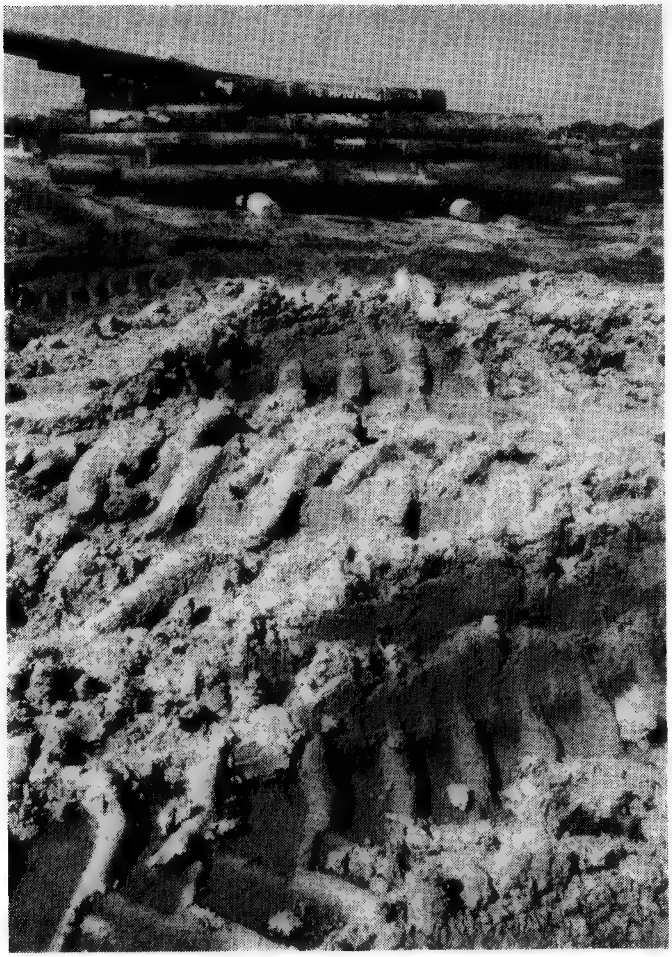
Ironically, only one kilometre across the lagoon a new "village", spawned by the "opportunities" of LPT, has emerged. In contrast to the shaded and natural beauty of Kolobaghia, the LPT town of Barora typifies the planning of the uninspired, a box village of perhaps 150 white fibro cubes with token verandahs, set on terraced clay in a treeless landscape, fanned by hot, untempered winds.

In contrast also, children wait restlessly in a market shelter for the sun to abate, to play soccer on a small, crushed coral powder field. They niggle at each other and tease in a way which is not characteristically Melanesian. Solomon Island children are by nature relaxed, passive and sharing and the greed devouring their forests is far from their hearts. In the village of Barora the seeds of social malaise have been sown and large yellow logging trucks raise white dust covering clotheslines strung with clothes that Melanesians in their utopia never once wore.

Some 11km further upward, along the road towards the magnificent rainforest stands of *Callophylum, Dillenia* and *Malina,* is the spearhead of the attack at Barora, the temporary village of Tesomine. Here reside the executioners, the tree cutters, and from this point into the heartland of New Georgia, are extracted the forest giants, pillars of some of the world's last untouched eco-systems, the tropical rainforest, sold for less than a song.

Ruben Peepa can't hear the chainsaws any more, but it's not that he's just getting old. LPT have near clearfelled areas of rainforest in North New Georgia and the land between his village home and the current logging frenzy is vast, a graveyard of scattered and





Top left: motorised dugouts are used for inter-island transport.

Below: John Seed with Solomon Islanders carving a dugout from a Goliti tree.

Top right: Whole logs await shipment to Japan at Barora, where machinery tracks have replaced a majestic lowland rainforest.

Photos — Andrew Frame.

broken tree tombstones, the whole covered completely with a vigorous climber. *Merrimea convulvulaceae,* a relative of Morning Glory, that ravaceous climber which makes the token LPT reaforestation project look like even less of a public relations venture. The LPT quota for North New Georgia is a giant 75,000 hectares.

In their wake, victims to LPT and the vine, the volcanic peak island of Kolombangara and now infertile Gizo Island wait for nature's healing hand, but even thousands of years will not restore the fertility and boundless resources supply to the indigenous island peoples. An ability to be totally independent is lost, nature is crippled, so is man.

Migratory workers from Malaita populate the towns of Barora and Tesomine and local men are notoriously absent. "The land is my mother" some of them say, many of them admitting they "need to work for LPT". Those who left are back on the copra plantations, slaves to the multinational (Levers) from another angle.

For LPT is a subsidiary of Unilever, the multinational giant, ninth largest in the world and to the Pacific, a modern colonialist, a Robin Hood in reverse. If "robbing the poor to feed the rich" seems like a harsh conclusion, the story of New Georgia logging only touches on the surface of LPT present and history.

Exploitation of the Solomon Islands began 100 years ago, when Lever Brothers began taking over coconut plantations to procure copra for their soap factories. Only "blackbirding", the migration of some 30,000 Solomonese to Australia and Fiji in the late 19th century to sweat for a pittance in the canefields, can sadly compare.

Independence, some five years ago, seems to be just a word around these islands. It's a ceremony forgotten, as the little rearranged "colonists" of today — British, Korean, Japanese and Australian — go their merry way unhindered while stories of government lethargy and under-the-table dealings run rife.

The handshake of a sweaty tropical palm seems to typify the promises of LPT, for example the schoolhouses that weren't built, the unneeded road, the building materials that never appeared, the taboo site which wouldn't be damaged and the typical agreement by minority landholders to give the trees over, to sell out "the mother".

While LPT creates squabbles between land owners over the right to *terra firma,* a separate body, the North New Georgia Timber Corporation, signs away the trees and they thunder down to Levers' Harbour at Barora to be exported whole to tree-clad Japan, where 70 per cent of untouched forest covers the "land of the rising sun".

Brazil, the Philippines, Indonesia, Papua New Guinea, going fast. While a starving world cries out for food, it seems that the oxygen will expire first, as multinational hangmen line up on their own queue to extinction, tight-fistedly holding the hands of their children.

Enter the spirit of Enogae

Enogae is a small village now, on the north west tip of New Georgia and in March 1982 the scene of a surge of spirit and determination erupting in the "violence" that caused an estimated $1 million damage to an LPT logging camp, similar to the box city of Barora.

The scene is one of comedy as well as tragedy: 200 irate islanders, mostly New Georgians, storming the village, smashing and burning the houses and setting fire to expensive logging machinery, while the resident policeman "went bush". According to many accounts, LPT workers even joined in.

This action followed an attempted canoe blockade some months before, during which the customary landowners were told they were trespassing on their own tribal soil as they tried to stop Unilever bulldozers going ashore.

Previous to this, the only other significant victory for the landowners had been on the now spoiled Kolombangara, where Iriri village people had managed to save their small acreage of dense rainforest hinterland by re-erecting "Stay Out" signs pushed over by LPT machinery, working its way around the island like an all-devouring caterpillar. The silver trail left behind is now an unused road, overgrown with that enveloping creeper and eroded as well. There are no vehicles on Kolombangara.

So the spirit of Enogae became the indigenous people's pride and right manifested as the logging ogre moved down a few blocks. The seven men who were jailed for two years became the martyrs of the rightful landholders, the people. And the Western Solomons became united for a time, followed by a threatened move towards independence unless the central government paid attention.

What happens here next is of world importance, not just because our planet is ailing, and in the 11th hour, but because here is a chance, a glimmer of hope, that the government might get behind the people, at least in this western province, and set a world example by managing its own resources in accordance with the wishes of its people.

The people don't wish to see their "mother" trodden and dismembered, soil eroded and resources lost. These lush forests provide the sago palm for their roofs, poles for their house frames and lawyer cane for thatching and baskets, fruit, nuts and tubers for their food and the giant *Goliti* tree from which to carve canoes. Forest product uses are endless and inseparable from the people in their quest to maintain their identity.

And what about the question of royalties? Whole logs gone to Japan and the pittance paid spent on a few tools of technology that only frustrate and break down. Galvanised roofs that make aerial scythes in cyclonic storms and rust away in the tropical humidity. At one village on Kolombangara, there is money in the bank they don't know how to spend, but worse, a rift that has divided the village into two colonies — a money wedge.

At Barora, TK, the bad guy, ceremoniously clad in a white-collared shirt, casts an eye across to the pale dustbox village store, overpriced and patronised by the wives of bulldozer drivers and chainsawmen, paid about $80.00 per month. In they go, out they come, wages spent on tins and packets, soap and batteries, consumers to Unilever, the marketing giant. They don't know that they just gave their money back.

Across the bay at Kolobaghia, Ruben Peepa casts an eye, an ancestral eye from an empty village. But he's looking out to sea, not back to Barora, there's nothing to please his eye there. A gentle afternoon breeze chops the wave tops toward an undisturbed horizon. Perhaps there's solace there?

For more information, contact **Solomon Islands Action Group,** C/- Rainforest Info Centre, Box 368, Lismore, NSW 2480.

PLEASE READ THIS CAREFULLY

Land lines is a free service, restricted to current Earth Garden subscribers who wish to buy, sell, lease, caretake or seek land. It is not a lonely hearts column.

Subscribers must include their name, surname and full address as proof of sincerity. They are responsible for checking all deals thoroughly. Please keep listings to 50 words, plus the address.

For sale, overlooking Queensland's Sunshine Coast, modern home amidst palms, tree ferns, 10 acres partly rainforest, four bedrooms, studio, separate SC cottage. Walk to country school. Caloundra 10 minutes' drive. Absolutely unique, $165,000. Suit artist, potter, writer, craftspeople, professionals or anybody who loves nature.

John and Cathy Wieriks, Leeding Road, Glenview, Qld 4552. Phone (071) 945 1651.

A quarter share in a 46 ha property, 15km from Grafton, NSW, with sealed road access and power available, is for sale at $10,000. The group's aim is to provide cheap rural land, close to a major town, for four compatible, considerate residents who will be equal shareholders in a corporate owner. Each share will include a permanent lease on 1 ha for private use.

Please address queries to Olivdale, PO Box 160, South Grafton, NSW 2461.

land lines

For sale — mini-farm in the city. It was our compromise while we worked and saved, now we're off to the country. We have a 10-year-old three bedroom house with family room, new laundry, new bathroom, new kitchen, verandahs front and rear, small fernhouse, workshop, huge vegie garden (producing 16 different vegies), with raised beds. The rear of our ½ acre has chook shed and enclosed run (we let them free-range all day) and goat shed and enclosed run for our three-year-old Saanen.

We are 30 minutes from city centre, 2-3 blocks from electric trains, shops, High and Primary schools and pre-school. We are zoned non-urban (rural). Have town water. Rates under $300.00 per year. We are asking $58,000.

Bob and Gail McCafferty, 70 Garfield Road, Berrinba, Qld 4117. Phone (07) 208 0709.

For sale, Gympie, Queensland, 13 acres scrub, timbered. Bitumen road, school bus, power and phone to gate. Small shed, cleared house and garden sites, 250,000 gal dam. Mudbrick houses with sod roofs have been approved and built in this shire. Price $25,000 negotiable.

Kathryn Haskard, 13 Daniel Street, Nambour, Qld 4560. Phone (071) 41 4718.

We are a couple in our mid-twenties with two children and have a keen interest in Christ-centred rural community living. Our plan, God willing, is to settle in northern NSW to southern Queensland. We will be visiting this region in December, 1984 and wish to make contact with Christian community-minded people.

Phil and Sue Kemsley, C/- PO Howard Springs, NT 5791. Phone (089) 83 1279.

A small community in a mountain valley near Deloraine, Tasmania, is looking for new members with children. We are seven adults and two children (four years old) and live on 200 acres. We are trying to achieve an alternative lifestyle in all areas. It will cost you $4,000 per person to become part of our community. We are interested in educating the children ourselves and possibly starting a school.

Please write to Wiiteena, PO Meander, Tasmania 7304.

For sale: Shares in rural co-operative 20km north of Dorrigo, NSW. Access to 500 acres (pasture, regrowth forest and rainforest), machinery, workshop, permanent creeks, dams and two sizeable rivers. Included are 2.5 acres for personal use with established gardens, gravity water supply, small cabin and workshed. Asking $11,000.

Steve Lawler, Box 99, Dorrigo, NSW 2453.

For sale — 50 acres bush retreat, 15km from coast and 10km from Murwillumbah, northern NSW, For past four years we have let the property regenerate itself and a varied growth is now coming up. There is a paddock of good red soil (2 acres or so) for cultivation, fenced paddocks for cattle, an electric fenced goat paddock, two creeks, a large shed, comfortable house with pot belly stove, new wide verandah, septic tank, telephone, electricity, many fruit trees and flowering trees. Excellent for a large family or a couple of families. We are selling because of family commitments. Price $100,000.

Phone (066) 77 7230, or write R. Williams and F. Sauvere, PO Box 581, Murwillumbah, NSW 2484.

We have for sale 102 acres, 25 miles (all tar sealed) south of Burnie in the northwest of Tasmania. The nearest shops and school are 13 miles away in Yolla and the phone will be connected within a year. The block is at an interesting stage of rainforest regrowth, with ample water and wildlife. We had hoped to conserve this block, clearing only a few acres for our homestead, but we are forced to sell, preferably to like-minded people. Price $18,000.

Trevor and Caroline Coff, 53 Smith Street, Wivenhoe, Tasmania 7320.

Tenterfield district, northern NSW. Two shares for sale in "Karrie Ael" Farming Co, a unit partnership of 44 shares. The partnership assets comprise 15,000 acres of magnificent country, pasture, bush, creeks, river and some rainforest, farming plant and equipment, etc. Price $10,000 per unit.

For further information, contact Pete May and Libby, 21 Bembridge Avenue, Frankston, Victoria 3199. Phone (03) 787 5574.

One share remains to be sold (six already taken) in our mountainous 300 acre private valley on the north east slopes of Mt Warning. The price is $15,000. The property is well-watered, well-timbered, fertile and borders the National Park. Telephones are connected, but electricity is not. A four wheel drive vehicle is essential. The shareholders are a tolerant, cosmopolitan bunch of people who will give every assistance to newcomers.

Contact: David Butler, "Derrilin", Eungella, via Murwillumbah, NSW 2484. Phone (066) 79 3266 (an answering machine may take your call).

Two shares are available in a community settlement co-operative on 50 acres of undulating bushland in south east Queensland. More than half our area is to remain native forest. On 20 acres already cleared we are using organic, low-impact methods for food production. Members' interests are in permaculture systems and biodynamics and we have a fruit orchard established. There is a good water supply including a permanent creek and three dams.

We want to attract people who are ready to come and live on the land, who love the bush and who can co-operate with a group and discuss plans and intentions on a communal basis. The sale of these last two shares will bring the number of shares to nine, with each having a value of $4,500.

If you are interested and would like to know more, please write to Coondoo Co-operative, 10 Stewart Road, Mt Wolvi, via Gympie, Qld 4570.

Work experience available on 764 acre farm near Wollombi, NSW, with orchard, organic vegetable growing, beef cattle and stock horses. Full board but no wages.

Edwin Crawford, PO Box 138, Cessnock, NSW 2325. Phone (049) 98 1341.

Five hectares, 20km north of Kyogle, NSW, with views to Border Ranges National Park. Deep, spring-fed dam, tall bangalow palms and rainforest trees. Frost-free, suitable for tropical fruit. Building sites, hardwood trees, secluded, with good access. Price $26,000.

Write: Ron and Cheryl Nolan, Davis Road, Green Pigeon, via Kyogle, NSW 2474. Phone (066) 33 1277.

For sale, Mary Valley, Queensland, 50 acres farmed biodynamically for past 3½ years. Fertile river flats 12½ acres, remainder flood free. Two deeds. Four bedroom chamferboard house in good order with septic, power, phone, pleasant garden, birdlife, 15 minutes to Gympie on sealed road. School bus at gate. Good fencing, sheds and yards. Ample water, improved pasture, seven paddocks. Price $98,500.

Phone (071) 84 3114. G. Crowther and A. McArdle, 1 Dodt Road, Amamoor, Qld 4570.

Having lost my "kindred spirit" to a warmer climate, I was wondering if there was a woman who wouldn't mind the cold winters and mostly blowy days and who shared my dream of being independent of the dole through the sale of organically grown vegies and flowers? There is no capital outlay required, just a love of all living things and a tolerance to an untidy Leo.

Please write to Anne Crawford, RMB 5114, Tower Hill, via Koriot, Victoria 3282.

Wanted to rent — small farm, approx 5 acres and farmhouse for small-time hobby farming. Possibility of purchasing land if we feel it is "right" for us. This would preferably be in Queensland in the Sunshine Coast region.

Please contact: Cathy Saunders, 2/11 Prince Street, Cooran, Qld 4569.

Five lush acres of dairy country 2.4km from Tyalgum, NSW (west of Murwillumbah) on a bitumen road. Fully fenced with a large dam. It needs a caretaker or someone prepared to pay $16,000 for a half share.

Contact Tony Douglas, 62 Lower Dandenong Road, Parkdale, Victoria 3195. Phone (03) 500 0260.

STONE FLOUR MILL

For sale, stoneground flour mill, Bodington, 7.5 HP, 3 phase, with spare set of grinding stones. Excellent working condition, would suit a small community co-op. Asking $4,750.

Please address all enquiries to All Things Natural, PO Box 6, Red Hill South, Victoria 3937. Phone (059) 89 2374.

Property wanted in Tasmania, minimum 15 acres, some bush. Liveable 3-4 bedroom cottage, outbuilding, permanent water. Price approx $30,000 to $40,000.

Reply Greig and Laurie de Wit, 9 Cavill Close, Holt, ACT 2615. Phone (062) 54 4086.

For sale, shares in holiday complex bound by tight legal deed. Each one acre share of $5,000 entitles you to the use of 50 acres of common area which includes rainforest to lightly timbered slopes overlooking the beautiful Tweed Valley and River. Area adjoins State Forest which gives access to miles of bushwalking, horse riding, rock hunting, swimming and fishing. Quarter horses, English and western performance training arena, 15 minutes to township, churches, hotel, 45 mins Gold Coast.

Write for colour brochure and further particulars to Lionel Mitchell, "Tarcoola" Quarter Horse Stud, Uki, NSW 2484. Phone (066) 79 5163.

One fifteenth share in 300 acre community farm in beautiful valley in the foothills of the Great Dividing Range, 25 miles from Warwick, 85 miles from Brisbane. Fertile soil, lovely permanent creek. Opportunities for agricultural endeavours, either alone or with other members. Cabin 45ft x 35ft faces north with fine view on own hectare homesite. Newly overhauled 32 volt lighting plant with washing machine, vacuum cleaner, iron, mixmaster and blender. Wood stove, large kero fridge, new 3,000 gal rainwater tank. Fenced vegi and herb garden, fruit trees. Telephone connected, power available, school bus passes door. Price $15,000.

E. and S. Colladetti, Maryvale (North Branch), MS 3921, Warwick, Qld 4370. Phone (076) 66 1129.

Ex-UK farmer and wife with no ties, seeking caretaker position. Interested in vegetables, chooks and general farm work. We are interested in being self-sufficient. Any area considered.

Contact A. and N. Lloyd, 18 Sharman Street, Medina, WA 6167. Phone (09) 419 1830.

For sale, 102 acres with 10 square pole-frame timber slab home. Telephone connected, electricity nearby. Includes cowbails, shed, large poultry run, established gardens, fruit and nut orchard (90 trees), permanent creek, dam. 25 acres cleared, fenced into paddocks, balance native forest, good timber, abundant wildlife. Good access, 1km to sealed road, general store and school bus, 9km from beaches, 18km to Batemans Bay. Price $120,000 ONO.

Contact Peter and Rhonda van Haeff, The Old Highway, East Lynne, NSW 2536. Phone (044) 78 6149.

Second-hand building materials for sale. Silky oak and cedar-framed windows in various sizes and also old doors. Ideal for mudbrick dwellings, restorations or sheds. Reasonable prices.

J. Crittenden, 17 Clarke Street, Warwick, Qld 4370. Phone (076) 61 4498.

Tasmania — quarter share in small established community in quiet mountain valley. We are a group of three families looking for a caring fourth to join us. The share for sale is undeveloped, with good access and gravity fed water from our permanent creek. Mostly forest trees and bush. No power. Price $5,500.

Write to Phil Young, RSD 954B, Lake Highway, Golden Valley, Tasmania 7304.

We require people (5,000 of them) who may be interested in the development and settlement of an agro-urban tourist centre in the outback of Australia (not a commune).

At this stage we are registering people's interest in supporting the project with their labour (12-14 months while being accommodated in temporary housing, provided with all meals, personal necessities and entertainment), or with your finance, or a combination of both. Either way your help and participation will earn you your own equity in the tourist resort and an ongoing job, if so desired.

"The Alliance" (a non-sectarian, non-political concept). Telephone Rob Smith on Melbourne (03) 560 0401.

For sale, 99¾ acres NSW/Qld border, gazetted Sanctuary and borders Girraween National Park. Three bedroom cottage in need of repair, but quite liveable. Two dams, one bore and windmill to be erected. Plenty of land for cultivation as well as untouched bushland. Approx three miles from schools and small town.

For further information contact A. May, PO Box 432, New Norfolk, Tasmania 7450.

Gossip

Dear Friends,

Thank you all so much for the response to our request for stories. We've received so many good, practical articles, written from first-hand knowledge.

In this issue we have *Earth Gardeners* moving out to the land, building with stone, mudbricks and poles, raising animals, tinkering with low energy devices — all of them getting the best value out of life by being more self-reliant.

This pleases us because it makes *Earth Garden* a friendly place where knowledge is exchanged, which is just what we want it to be. Please keep those stories coming in.

EG44 — solar electric systems

We've just come back from two enjoyable days, meeting people at the *Small Farms Field Days* at Mudgee, NSW. One aspect that stood out there was the many displays of solar electric systems, especially pumps. In our next issue, *Earth Garden 44,* out in November, we plan to update solar electrics and write about the 'second generation' solar cells now on the market.

We'd like to hear from you on how you are using solar electric lights and power, with any tips, suggestions or problems you may have. For example how do you run washing machines, refrigerators, vacuum cleaners and kitchen appliances, do you use AC power via an inverter and have you had any problems with battery life? Our deadline for stories (with photos or illustrations if possible) is the beginning of October.

1985 subscriptions

This issue goes out to a record number of subscribers. Because we get the full cover price from our mail subscribers (not just 50 per cent as we do at newsagents), we are able to keep the price of *Earth Garden* down to $2.50 a copy *and* pay the postage to you. We will keep producing a quality magazine, without advertising, so long as this support continues. To sustain us, please renew your subscription *now* for our four 1985 issues, EG 45 to 48 at $10.00 for the year (order form below).

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EG1: Move out ... food co-op ... earthworms ... Kibbutz & Moshav ... herbs ... access key ... Fred Robinson ... bean sprouts ... Montsalvat ... organic growing ... comfrey.

EG2: Organic farm ... start a garden ... Neil Douglas the garden artist ... Kiewa farms ... keyline system ... drying and storing food ... hydroponics ... compost garbage ... nutrition.

EG3: Herbs ... making compost ... fast fertilizer ... all about goats ... companion plants ... mudbricks with Neil & Abbie ... water wheel ... domes ... salads ... bread ... pottery ... spinning ... vegies.

EG4: A pleasant treatise on the honey bee ... working bees ... sources ... back to the land in Tasmania ... the transition ... black sheep cycle ... tanning ... candles ... bread ... domes ... donkeys ... wall hanging.

EG5: The wind — windmills ... windpumps ... generators ... raku pottery ... Cinva ram ... keeping poultry ... Hamburghs ... moon planting ... vegan way ... fallout shelter ... just 9 acres ... garden tools.

EG6: Solar 1 — sun cults ... solar cooker ... sundials ... the lost world ... Clifton Pugh ... concrete house ... Shalom ... Cajun cookin ... animal care ... horses ... spirit of Nimbin.

EG7: Solar 2 — hot water ... solar ideas and sources ... good company ... Angora goats ... make a leather bag and belt ... survival skills ... mushrooms ... natural dyes ... mudbricks again ... flight from the city.

EG8: Gas power — methane digester ... power from the pig pen ... by truck to Tassie ... just ¼ acre ... cumbungi hats ... Harmony Farm ... inkle loom ... tapers ... country cottages ... a frame ... school gardens ... sourdough.

EG9: Alternatives to petrol — LP gas ... Mary's place ... building with stone rubble ... oats ... ducks ... macrobiotics ... horse and cats ... rug frame ... natural farming ... how to kill a pig.

EG10: Granite house ... bamboo flutes ... geese ... chip heater ... make beehives ... mudbricks yet again ... Jarrah shingles ... methane ... Bio-dynamics ... tandem ... seaweed ... index (EG 1-9).

EG11: Water — hydraulic ram ... water wheels ... miller's tale ... okra ... seed primer ... heavy horses in Quebec ... tomatoes ... soft technology ... start with hens ... wine ... hard cheese.

EG12: Keeping food ... drying ... salting ... bottling ... storing ... meditating ... tahu ... tobacco ... tropic delights ... plant propagation ... plans for a solar water heater (part 1) ... solar stills ... solar cooker ... Moora Moora.

EG13: The bush — men with axes ... woodchips ... native garden ... flora & fauna ... national parks ... wild places ... wildlife ... bushcraft ... solar hot water plans (part 2) ... straw & paper garden ... producer gas ... Jerusalem artichokes.

EG14: Self-sufficiency — gardens for all ... Botobolar vineyard ... Abbie's goats ... Terania Creek ... millet ... Crusoe ... Thoreau at Walden ... Helen & Scott Nearing ... healthy soil ... we built in stone.

EG15: A Lytel Herbal — growing and using herbs with text and illustrations from the classic 16th century herbals with modern commentary ... companion herbs ... herb sources & books ... index to EG15.

EG16: A Lytel Herbal (Part II) — comfrey lavender ... wormwood, yarrow ... people & the land ... poultry shed ... Moora Moora ... peafowl ... goat notes ... basic beekeeping ... building in pise (rammed earth) ... miracle pump.

EG17: All about fencing ... dry stone walls ... make nets ... your own soap ... Autonomous house ... pole shelter ... breeding black sheep ... owner-builders ... asparagus ... Aeolian harp ... Khaki Campbells ... D for duck.

EG18: Fruit garden — oranges ... lemons ... olives ... nuts ... tropical fruit ... fodder trees ... built a road ... homebirth ... wood-fired pottery kiln ... Cinva-ram cottage ... earthworms ... hulling sunflower seeds.

EG19: Wood heat — pot bellies ... Jotul ... cooking ... making a quid ... build a storage cellar ... bushfires ... Sunrise Farm ... stonefruit ... macadamias ... budding ... binding your EG collection ... tree planting.

EG20: Apples ... pears ... cordon & espalier ... avocado ... the Zolins ... pollen ... build a haybale pig house ... love your cow ... rose hips ... the mudbrick flats ... solar homes ... gourds ... preserve fence posts.

EG21: Womancraft — all articles by women ... settling down ... earthly arts (interview with Abbie Heathcote) ... axewomanship ... glove puppets ... joy of spinning ... time to weave ... easy rugs ... lambing ... Sumatran house ... mudbrick weekends ... the group ... old roses ... index (EG10-20).

EG22-23: Australian Access 150 page sourcebook — Aborigines ... organic food growing ... permaculture ... Bill Mollison ... earth building ... wind ... solar ... water power ... solar cells ... water supply ... bucket pump ... with access to groups, books, tools and techniques ... small scale technology.

EG24: Place — 24 groups and new settlers share their place outside the cities ... including Mare Carter ... Ron Edwards ... Neil Douglas ... Gundaroo Store ... Rainbow Region ... Universal Brotherhood ... Mt Oak ... Moora Moora ... bush ashram ... desert oasis, cold winters ... personal stories from 20th century pioneers.

EG25: Australian Access 2 — 130 page sourcebook — livestock ... acquaculture ... fencing ... wombat gates ... killing ... tanning ... food and nutrition ... Dorothy Hall ... a year's supply of food ... grain grinders ... mincers ... methane basics ... wind generator ... low energy solar homes ... greenhouse ... more tools & techniques.

EG26: Colour spread on the earth-built kasbahs of Morocco ... owner-builders report on homes of stone, timber and mudbricks ... build a slab cottage ... tree felling ... two solar-electric homes ... Earth Garden survey ... survival vineyard ... acorns ... fruit without poisons ... compost dunny ... home-made gas ... quandong ... pumpkin recipes.

EG27: Plants we eat — 100 tropical food plants for Australia (part 1) ... plant protein ... 16 legumes to grow & eat ... like winged bean ... pigeon pea ... lablab bean ... cowpea ... sword bean ... chickpea ... sugar pea ... mung bean ... soybean ... adzuki bean ... life-raft ... blacksmithing ... bluestone building ... mudbrick solar home ... wok cookery ... choko ... homebirth.

EG28: Animal stories — by packhorse through the Victorian Alps ... horse & buggy ... Mary's black sheep ... the woolly Merino ... Timbertown bullocky ... tropical food plants for Australia (part 2) ... stringybark baskets ... tamarillo ... buying bees ... solar trike & fan ... make a poker ... persimmon ... seed patents.

EG29: Mudbrick building primer — the monastery at Stroud ... six builders & their mudbrick experiences ... mud barbecue ... Bob's bonza brickmaker ... earth floors ... curved walls ... herbs on the roof (sod it!) ... low energy design ... the cutting axe ... food plants for tropical Australia (part 3) ... coconut mats ... mango mania.

EG30: Organic growing guide ... the organic idea ... food without poisons ... making compost in heaps, pits, trenches, boxes, bins & barrels ... carpet the garden ... wot no digging? (mulch it instead!) ... organic methods for the semi-arid West ... compact growing boxes ... a traditional farmer ... preserving figs ... tasty tempeh ... the Bornhoffen story ... pasta ... glass bottle mosaics ... two trickle watering systems ... cool kitchens ... macrobiotic bakery.

EG31: Energy alternatives at work — make your own hydraulic ram ... second-hand windpump ... yacht wind-generator ... mudbrick sequels ... freezing food ... blanching ... choosing a freezer ... zucchini glut ... drying fruit ... all about sprouts ... fireless cookers (hot boxes and baskets) ... camp oven ... growing greens in the wet ... building a log house (part 1) ... index (EG 21-EG30).

EG32: Trees — tribute to trees ... St Barbe Baker tree tales ... how a tree works ... the miracle of a leaf ... native trees from seed ... trees on the farm (interview with Tim Cox) ... forestry directory ... dieback ... renewing the land ... coppicing ... the woodchipper blade ... value of trees ... artist in the bush (interview with Neil Douglas) ... low cost country home building ... earth building books ... cob does the job ... building a log house (part 2) ... square foot gardening.

EG33: Tenth anniversary issue ... uses of wood ... timber felling ... lifting poles ... post-and-beam design ... building a log house (part 3, concludes) ... parquet floors ... backyarders' livestock ... goats ... rabbits ... fowls ... portable hen-house ... dandelions ... wild tea party ... bush regeneration ... planning figs ... dry pit loo ... blackberry-eating beetle ... weeding tools ... catchment philosophy ... seed supplies.

EG34: A look at China (extra colour photos) — the commune system ... teaching the masses ... trees of friendship ... forestry ... fish farming ... recycling human wastes ... biogas ... transport ... travel notes ... Ron Edwards writes on earth building the Chinese way (and tea) ... making the farm pay ... places ... bread & jam ... what to do in the Year of the Tree ... rainforest ... eco-gardening.

EG35: Bees and trees — Tributes to Richard St Barbe Baker ... tree tales ... backyard bees ... hiving a swarm ... St Barbe's bees ... a beginner's kit ... beekeeping books, equipment, clubs and information ... nectar-yielding eucalypts ... self build housing ... mudbrick workshop ... earth wall footings ... make your own solar collector ... a good workdog ... magpies ... wormiculture ... nuclear nightmare ... waste to compost ... dig for victory ... fodder trees.

EG36: Settling in at Nimbin — glimpses of Nimbin settler's tales ... interview with a woman builder ... handbuilt homes ... a pawpaw plantation ... birth & beyond ... plug in the sun — simple, cheap, solar electric systems ... passive solar 'rules of thumb' ... biological building ... farm structures ... a potty garden ... choughs ... bush birds ... the inn at Ollantaytamboo, Peru ... more fodder trees ... regreening at Young ... make a lavender sachet ... the food page ... nuclear-free Australia? ... More!

EG37: Hard times — sidestepping the recession ... new paper from old ... newspaper fuel ... rags to rugs ... barter ... when the lights go out ... slush lamps ... sawdust stove ... tin can cooker ... the hungry 30s ... Depression dodges ... Happy Valley humpies ... hand grain mills ... 120 money saving hints ... make soap ... whitewash ... polishes ... cleansers ... glue ... insect repellents ... table of raw materials ... passive solar design ... roof ponds ... solar cell update ... donkeys at work ...

EG38: Access survey — where to buy alternative energy equipment ... electric grain grinders ... Hard Times tucker ... back to basic bread ... batch baking ... steam cooking ... sustaining soups ... no-meat meals ... solar dried bananas ... yoghurt ... summer cheese ... cheap meat meals ... home brewed beer ... coffee from tree to cup ... a Gujarati village ... Noel's Island ... Wild Country Park ... Depression days ... small farm equipment ... earth walls and bushfires ... mudbrick hermitage ... owner-builder problems ... the electromagnetic house (building biology) ... Self-Build success ... Hondas on the farm ... sweet cherries ... winter in the vineyard ... more!

EG39: Alternative technology — low-voltage small-scale ... run lights and TV from your car battery ... Peter Pedal's bicycle wheel wind generator ... farm energy system ... fire without matches ... change AC to DC ... bushfire defensive house ... earth building notes ... a reply on mudbricks ... the indoor climate (building biology) ... backyard food growing ... intensive plot ... a sense of humus ... try herbs ... rosehips ... avocado growing guide ... laying out a farm ... protecting trees ... the vineyard in spring ... dairy notes, 1898 ... tasty tomato recipes ... herb teas ... recycling containers ... bread happiness ... old-time household hints ... changing lifestyles ... access ...

EG40: Communities — "constructive alternatives" . . . Communiversity . . . village in the making . . . start a food co-op . . . making the co-op work . . . three in a caravan . . . Scott Nearing — a good life . . . how we make cyder in Tasmania . . . trees for fire protection . . . tree planting at Undalya . . . the self-built house . . . extracts from The Muddies Manual . . . raw earth . . . earth floors . . . bushfire resistant housing . . . boiling the billy . . . hares . . . tetanus . . . laying out a farm (part 2) . . . olive oil . . . cashew nuts

EG41: Wandering — across the Sahara . . . Uganda . . . in Australia with pack donkeys & by horse float . . . the lure of Timbuktu . . . adventure travel access . . . Sahara mat-tents . . . Moora Moora 10 years on . . . build a Savonius rotor bike wheel wind generator (Peter Pedals) . . . energy access . . . yeastless breads . . . dampers . . . build a shadehouse . . . food co-op books . . . recipes for real potatoes . . . sheep stories . . . index to Earth Garden issues 31-40.

EG42: Building — earth-covered housing . . . the Burra dugouts . . . our stone home . . . slipform technique . . . flood defensive house . . . build a Chinese pigsty . . . earth architecture conference . . . mudbrick notes . . . compost power (methods of Jean Pain) . . . tomato tips and treatment . . . gardening on the move . . . herbal insecticides . . . worthy concepts . . . deep ecology (We are the rocks dancing) . . . Earth Garden reader survey . . . healthy goats . . . breakin' in the Fergy . . . pay your way . . . Botanic Ark . . . earth travel . . . the Tuareg . . . people and places . . . bourgeois communes!